USING AN INTERDISCIPLINARY APPROACH TO PROMOTE CREATIVITY:

Investigating Canadian Post-Secondary Design Education

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APPENDICES

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1.0 ABSTRACT

Creativity is a key factor in a well-rounded design process; without creativity, design cannot fulfill its potential. There are numerous practical methods for promoting creativity in design pedagogy at the undergraduate level, including an interdisciplinary approach. However, there has been little integration of an interdisciplinary approach into design curriculum.

Focusing on Canadian post-secondary design education, this research identifies the state of the current education model, defines the importance of an interdisciplinary approach and its benefits, draws links between an interdisciplinary approach and creativity, and describes a variety of methods for promoting creativity. Design pedagogues from 88 institutions contributed to this research by participating in a national survey; further, eight interviews were conducted with select educators. Three workshops with design students were run to test various interdisciplinary teaching approaches. Based on the research activities completed, a series of approaches and techniques to promote creativity in design education are proposed. The fundamental goal of this research study is to examine if the integration of an interdisciplinary approach can effectively encourage creativity in the undergraduate design classroom.

2.0 INTRODUCTION

2.1 CREATIVITY AND INNOVATION

The only constant is change. As the modern world continues to speed up, change happens more rapidly than ever before: new cultures emerge, some countries disappear, technologies revolutionize, science makes new discoveries, globalization grows, trades expand, and the climate continues to alter. Creativity is a key factor that can contribute to humankind's survival on the planet because it involves fluency and flexibility of thinking, originality, perceptiveness of problems, and the ability to redefine and tackle problems of the modern world. Creative people display a tolerance for uncertainty, a willingness to overcome obstacles, to take risks, to experiment, and to grow (Lynch and Harris 2001). Creativity is an essential component of the powerful human potential to bring into being something new. As the future remains largely unknown, creativity assures people's ability to adjust to new challenges.

Creativity is linked of innovation. "Creativity and innovation are the lifeblood of many of today's most successful organizations." (Diliello 2011, 151). Creativity in the workplace is generally considered essential for fostering organizational innovation, a key ingredient for long-term organizational growth, survival, and a valuable addition to a high-performing economy (Diliello 2011, 152). Innovation yields efficient means to provide what people need or want (CCA 2009, 27). "It is also critical to environmental protection, a high-performing education system, a well-functioning system of health promotion and health care, and an inclusive society." (CBoC 2012). The evidence demonstrates that the main difference between Canada's "economic well-being today and yesteryear is explained by the prevalence of new products, services and production processes in the economy." (Whelan 2001). Innovation is "the only reliable basis for long-term corporate growth, distinct from the short-term gains that might be made from monopolistic practices or market power." (Morone and Taylor 2012, 21). However, innovation is not just about science and technology, it is also about arts and culture. "Technological development and the arts have always had a symbiotic relationship." (GII 2012, 163). The *creative economy* and the *creative industry* are no longer treated as simple buzzwords but rather are being implemented into the economic agenda of countries.

Given that creativity is an essential part of innovation and that innovation is a driving force of the future, Canada continues to fall behind other countries. "Canada's innovation system at the turn of the twenty-first century is much as it was in the 1980s." (Whelan 2001). Canada ranks 12th in the *Global Innovation Index 2012* and it is the only economy that dropped out of the top 10 in 2012. "Canada has many strengths but it does not translate its excellent ranks in

institutions (2nd) and Market sophistication (7th) into innovation outputs. The priorities at the education and research level (25th) do not seem to go in the direction of fomenting innovation." (GII 2012, 16). Figures from another source report that Canada ranks 14th in the world in 2007 for innovation while scoring a grade of "D" (CboC 2012). Canada's economy will face long-term challenges if it does not more fully embrace innovation (Tencer 2012).

There is a need for Canada to re-focus on how to become "a global leader in innovation, adaptation and renewal." (Isfeld 2012). Since the innovation gap is partially an education gap, improving Canada's performance requires the right balance of both the quantity and quality of talent, a balance where post-secondary institutions, federal and provincial agencies, industry and other partners collaborate together (Innovation Canada 2011, 2-14). Thus, Canada's innovation-based future depends on sufficient numbers of talented, educated, and entrepreneurial people. The main source of such talent is post-secondary education including the universities, polytechnics, and community colleges that produce the innovators and supporters of innovative and creative activity (Innovation Canada 2011, 2-14). The *Council of Canadian Academies* contends that Canada needs a new model to teach "digital natives" how to develop the critical faculties necessary to function in an information intensive culture (Lang 2012).

2.2 DESIGN EDUCATION

As a *creative economy* continues to grow the demand for creative individuals increases. Primary and secondary schools are largely responsible for establishing foundations, while post-secondary education should further foster creativity. As teaching creativity in Canada is a vast subject to explore, this research study focuses on undergraduate education in design. In general, design programs strive to enable students to become creative, socially-aware, and knowledgeable individuals who can contribute their design expertise to an innovation-driven economy. Ideally, students acquire the understanding that design is more than a visual aesthetic — design is a life skill, a skill that helps students and practitioners incorporate knowledge from a variety of disciplines and translate that knowledge to effective applications for everyday life. "When properly understood and studied, design provides a powerful connective link with many bodies of knowledge." (Buchanan 1998, 66). "Design involves a prescription or model, the intention of embodiment as hardware, and the presence of a creative step." (Archer 1984, 59). Even fifty years ago, at the Ulm School of Design, Bruce Archer and other design enthusiasts perceived design beyond visual aesthetics, and as a bonding link between various disciplines.

However, much of modern design education in Canada remains highly traditional. Design education is often led by craftspeople who focus on skills with little acknowledgment of the need to change design education (Norman 2011). Although design needs to continue to incorporate the aesthetic side of arts and crafts in order to bring joyful experiences to people, the new generation of designers need to go beyond visual aesthetics and, as Bierut would say, stop worshiping at "the altar of the visual" (Bierut 2007, 16). The belief and practice that design education must follow behind industry instead of working as an equal partner furthers the common misconception that design is a craft.

"[Schools] teach basic skills suited for needs of the trade, but little else. And the skills are typically dictated by the trade." (Buchanan 1998, 64). This results in many designers' inability to solve complex modern problems dealing with interaction, service, organization structures, and social issues. Design schools need to educate students about these complex issues (Norman 2010).

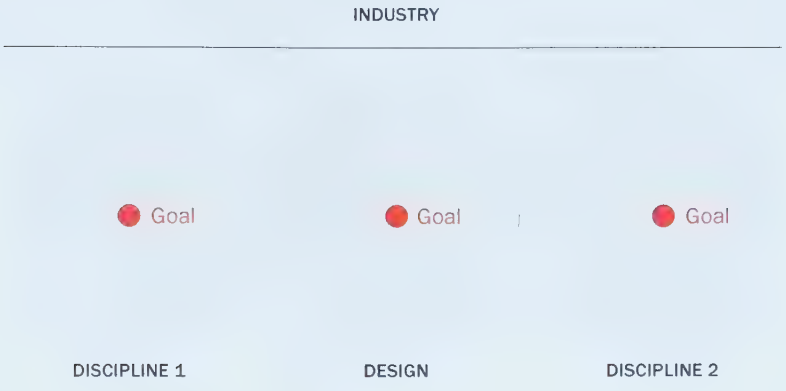
This research study proposes a move away from this traditional model of teaching by introducing an interdisciplinary approach as a method to foster creativity in undergraduate design education.

2.3 A MOVE AWAY FROM TRADITION

"We are now in the 21st century, but design curricula seem stuck in the mid 20th century, except for the addition of computer tools." (Norman 2011). Many schools rely on the traditional models of studio and portfolio based teachings with no clear agenda or objectives for the future. At the same time, employers are increasingly looking for applicants who can examine disparate sources of information, critically analyze data, and approach problems from more than one perspective (Millar 2012). In other words, employers are seeking individuals who approach briefs from a creative standpoint. While some schools acknowledge that it is time to reform design pedagogy, there is no defined structure or unified consensus amongst institutions. "Overall, the schools' results are often a muddled mess, the end result of programs pulling in every direction, with no sense of focused common ground, no basic core curriculum in design." (Amit 2010). Having a more unified foundation is essential, but a complete standardization could hurt the diversity and richness of design pedagogy.

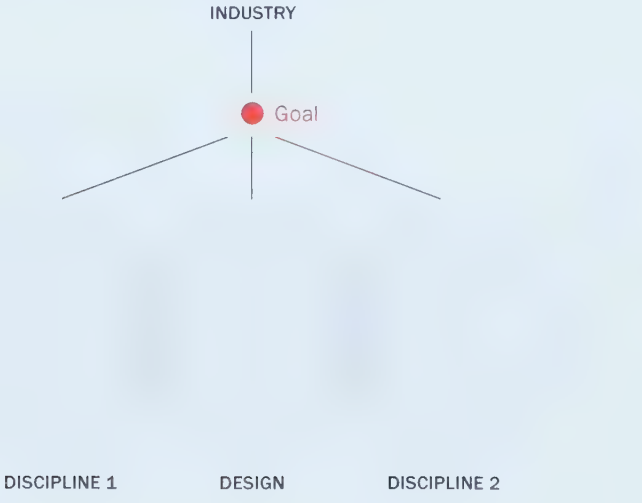
In practice, the boundaries between disciplines remain distinctly defined. Regardless of whether it is a design-related discipline such as architecture, interior, graphic, fashion, industrial design or another field within the sciences, arts, or humanities, there is often a lack of interaction and collaboration between different disciplines (Figure 2.0). "Even though design within the broad definition of Buchanan, Archer, and others can embrace engineering, architecture, and computer sciences, as well as product design, interior design, and communication design, these communities of practitioners are sharply divided" (Margolin 2010, 74). This environment creates an isolation that goes against the principles of fostering creativity. This research does not advocate against disciplines as they are important to maintain hierarchy and structure within institutions. People cannot "understand interdisciplinary without first examining the existing disciplines, since interdisciplinary approaches are always an engagement with them" (Moran 2010, 2). Instead, this research encourages design educators to engage other disciplines in the design process and seek interdisciplinary collaborations within educational institutions and beyond.

Figure 2.0 Diagrammatic Representation of Discipline-Based Curriculum



Understandably, students perceive the modern world through the lens of institutions. Often this type of conceptualization puts students in a position where they do not experience the real world until after graduation. Although this filtering might work for disciplines such as history, anthropology, or literature, other disciplines like physics, economics, politics, and design benefit from the direct engagement of students with the real world. Superficial briefs that are presented to students in a typical design studio environment may provide teachers with better control, but they decrease the likelihood of unexpected creative outcomes. Experimental learning such as utilizing interdisciplinary methods offers a greater opportunity to connect students to the immediate world (Figure 2.1). Bringing other disciplines or even real clients into the classroom increases the possibility of students gaining an appreciation of perspectives other than their own, develops their ability to evaluate the testimony of experts, increases sensitivity to ethical issues, helps identify disciplinary biases, and nurtures original, creative, and unconventional thinking (Newell 1994, 35). Design education should better reflect the interdisciplinary nature and possibilities of design.

Figure 2.1 Diagrammatic Representation of Interdisciplinary Curriculum



Another traditional belief that dominates design schools is that students must *naturally* display a high level of creativity if they study in a creative field. This old-fashioned notion puts design into a fragile territory — students are inartistically expected to be creative. Creativity is traditionally characterized as a unique talent demonstrated by selected individuals as a psychological event, while modern thinking claims the opposite — namely that creativity can be taught, fostered, and encouraged. Creativity goes beyond mental processing; it is also a by-product of cultural and social shaping (Csikszentmihalyi 1999, 3). It is rare when one individual is able to come up with valuable original ideas without interacting with others (Sahlberg 2010, 343). By establishing and diversifying interdisciplinary collaborations, design institutions can provide students with better opportunities to be creative and innovative. Design education should consider the use of experimental learning such as an interdisciplinary approach to help ensure that creativity is consciously fostered in students.

2.4 DEFINITIONS

For the purpose of this research, an interdisciplinary approach is defined as a curriculum structure in which the faculty integrates information, techniques, concepts, and theories from various disciplines and other fields of study to advance students' capacity to understand issues and propose new solutions that extend beyond the scope of traditional visual communication design studies (Rhoten et al. 2006, 3). In this study an interdisciplinary approach refers to involving disciplines outside of visual communication design programs — including other research and study areas, professions and clients — to participate in the design classroom. Another term that is incorporated into this research study is *interdisciplinarity*, which indicates collaboration between various disciplines and visual communication design.

Creativity is difficult to define and characterizations vary from one researcher to another. However, having multiple definitions gives researchers a wider perspective. "Creativity is a state of mind in which all of our intelligences are working together. It involves seeing, thinking and innovating." (Lucas 2001, 38). This statement demonstrates that creativity is the combination of many intellects and is not its own independent intelligence. While the mental process of creativity is hard to identify, "we know creativity when we see it." (Saebø et al. 2006, 207). Creativity means questioning assumptions. Creativity means making unique connections often unseen by others. Creativity means seeing the world differently, and *creatives* are experimenting, taking risks, and are ready to make mistakes (Lucas 2001, 38).

2.5 SUMMARY

Creativity is an important and dynamic force of the economy, social well-being, and individual growth. Consequently, post-secondary institutions should incorporate, lead, and investigate creative and experimental learning. In the context of design education, the traditional studio-based model no longer satisfies the needs of the demanding modern world. Instead, new methods that can teach students to be creative and adaptive must be implemented. This study proposes an interdisciplinary approach as one of the methods that

provides immediate interaction with the outside world from within the classroom setting, thus allowing students to be more prepared for the future.

This research questions whether visual communication design education can be improved so that graduating students are more able to address the complexities of the modern world. Based on background information and the literature review reported in *Context (3.0)*, the interdisciplinary approach to promote and encourage creativity is a relatively new method with potential for advancing teaching practices. While it has been used in some post-secondary design programs in Canada, it has not yet been officially integrated into the curriculum. This research defines, identifies, and establishes links between creativity and an interdisciplinary approach through a series of quantitative and qualitative research activities including a survey (*4.1 Survey Results*), interviews (*4.2 Summary of the Interviews*), a questionnaire, and workshops (*4.3 Testing Results*). The study also specifies which particular methods and techniques are the most applicable, reliable, and successful in design programs across Canada, as reported in *Research Analysis and Discussion of Results (5.0)* section. The fundamental goal is to investigate the integration of an interdisciplinary approach in design curriculum and how it can effectively encourage creativity in the undergraduate design classroom.

The primary research question being addressed in this research study is:
How can an interdisciplinary approach promote creativity in design education?

3.0 CONTEXT

3.1 CURRENT STATE OF DESIGN EDUCATION

Design as a field is interdisciplinary. Graphic designers, who structure the world's communications, constantly engage in various fields. "In a single day, a designer can talk about real estate with one client, cancer cures with another, and forklift trucks with a third." (Bierut 2007, 14). Participating in numerous fields does not necessarily mean that designers are utilizing in-depth knowledge to produce meaningful work. The reality is that a large percentage of designers have little deep understanding of the complexity of the problems that they are attempting to solve; and many modern problems involve complex social, politic, and economic issues. As a result, designers are becoming behavior scientists, economists, engineers, but they are "woefully under-educated for the task." (Norman 2010). According to Don Norman, a well-known academic and critic in the fields of design, cognitive science, and usability engineering, "Design schools do not train students about these complex issues, about the interlocking complexities of human and social behavior, about the behavioral sciences, technology and business. There is little or no training in science, the scientific method, and experimental design." (Norman 2010).

Design as a discipline continues to evolve. While the twentieth century has developed wonderful craftspeople capable of producing modern products, design in the twenty-first century is moving away from "craft" and instead addresses the issues of interaction, experience, services, cognition, and strategies with people in mind. Naturally, design education is expected to reflect those changes and be ahead of the industry. However, much of design education continues to be led by craftspeople that often believe in technical skills and visual aesthetics above all. "Design education is mired in the past." (Norman 2011). Worldwide, design is often seen as a combination of applied art and applied science. But this belief is outdated. There is a need for design educators to move away from the model of "applied" to one of "involved", "situated", and "embedded" (Findeli 2001, 5–17).

A majority of design schools in Canada use a studio-based approach as a standardized curriculum paradigm. This approach is described as "reflective practicum in designing", where students grasp concepts by trial-and-error practice (Wang 2010, 175). In this model, teachers reenact their own and sometimes other people's representations of the world in the classroom and students do not have direct and immediate participation in real world practices (Dillon and Howe 2007, 69). During studio-time, students are also asked to become temporary experts in the areas outside of design — including a wide range of science disciplines, engineering, programming, fine arts, and many others — and then propose solutions to simulated design problems by

implementing their creative and technical skills. As an average design student does not posses extended knowledge of other disciplines, many issues remain unresolved and unquestioned, which limits opportunities for innovation and extensive thinking outside of the design discipline. "No single individual knows enough about all the relevant disciplines required to make a project successful." (Norman 2011). This is because design is not a simple link between art and science. Instead, both art and science should be fundamentally implemented into the classroom, resulting in a mutual flow and interchange. Design education needs to develop a system that will allow an understanding not only of planned artifacts but also the "invisible relations among inner worlds of designer and the client(s) and the outer worlds of society and the biosphere." (Wang 2010, 178). Consequently, the model presented here examines possibilities of moving beyond a traditional studio-based curriculum by proposing *interdisciplinarity* as a framework for establishing design in relation to other disciplines in the learning environment.

Some design educators attempt to incorporate an interdisciplinary approach into their studio-based classes, but there is still a lack of training on complex issues, such as behavior sciences, technology, the scientific method, experimental design, and business. There is an acute need for entire projects to be conceived in a new way (Wang 2010, 178). Don Norman believes that there should be a new form of design education "with more rigor, more science, and more attention to social and behavioral sciences, to modern technology." (Norman 2010). That is precisely what Walter Gropius was wondering about in 1947, "Is there a science of design?", while Moholy-Nagy said, "the key to our age is to be able to see everything in relationship." (Findeli 2001, 10). Perhaps it is time to conceive design education possibilities that will help new kinds of designers to emerge: those who are fluent in the language of technology; those who can work across various disciplines; and those who can understand human beings, business, and applied science (Norman 2010).

This literature review presents the subject of an interdisciplinary approach and how it is being widely defined and selectively implemented into general education. Then, the notion of creativity is introduced and discussed in the discourse of today's economy and design education. The last section focuses on drawing specific connections between interdisciplinarity and creativity in the context of design education.

3.2 INTERDISCIPLINARY APPROACH

> "The men and women who invented graphic design in America were largely self-taught; they didn't have the opportunity to go to fully developed specialized design schools, because none existed. Yet somehow these people managed to prosper without four years of *Typography*, *Visual Problem Solving*, and *Advanced Aesthetics*. What they lacked in formal training they made up for with insatiable curiosity not only about art and design, but culture, science, politics, and history." (Bierut 2007, 14).

Even though undergraduates today take courses on *Typography*, *Visual Problem Solving*, and *Advanced Aesthetics* that Bierut, who graduated from design college in 1980 (Design Observer), would consider a privilege, students

are mainly left to function within the framework of a single design discipline. Although, the average number of undergraduate courses per institution has doubled over the course of the past thirty years, the percentage of mandatory courses in general education has dropped by more than half (Wilson 1998, 13). This type of structure helps students to specialize, but limits possibilities of being exposed to, and learning new things. Reform is needed, where science overlaps with social sciences and humanities. Only fluency across boundaries can provide a clear view of the world as it really is (Wilson 1998, 13–14).

Interdisciplinary learning continues to grow in many institutions worldwide, though only some design programs truly incorporate interdisciplinary learning. Most of the interdisciplinary acquisition continues to happen in disciplines such as engineering, religious studies, literature and languages, biology, physics, mathematics and others. Usually those collaborations exclude the design discipline because institutions continue to frame design as a craft or trade that lacks established scholarly research and investigation. Design programs need to establish themselves in a wider academic community. There is a need to stop being defensive about existing curricula, accept the imperfections, and be willing to change (Norman 2011). This chapter first focuses on multiple definitions of interdisciplinarity; the benefits of interdisciplinary learning; influences and shaping factors of an interdisciplinary approach; difficulties that interdisciplinary learning faces; and finally this discussion presents existing examples of interdisciplinary pedagogy.

3.2.1 Definitions

Seeing the world though more than one lens is the main promise of interdisciplinarity. This approach is "perceived to contain a diversity of elements such that several sciences rather than one provide the capability of explanation and addressing problems, devising theories and methodologies which are drawn from several disciplines." (Ingham et al. 2012, 94). An interdisciplinary approach in educational systems is characterized as "centralizing and combining knowledge on a particular subject from various disciplines, knowledge which is taught during class and is unified under a common subject." (Kampouropoulou 2011, 60).

Lisa Lattuca, the author of *Creating Interdisciplinarity*, believes that "most definitions specify the integration of different disciplines as the litmus test for interdisciplinarity." (Lattuca 2001, 78). In order to leave the question of integration open, one should see "interdisciplinarity as the interaction of different disciplines." (Lattuca 2001, 78). Interdisciplinarity can go beyond university walls, where collaboration solely happens between different departments, and can incorporate many parties such as the private sector, industry, government agencies and others.

3.2.2 Benefits of an Interdisciplinary Approach

> "Contemporary education is seeking new teaching methods, which will help it keep up with the challenge of multidimensional social reality, in order to be able to meet the needs of our time and deal with the complex nature of the problems that arise. The interdisciplinary approach is proposed for the counterbalancing of the lack of flexibility of one-dimensional thinking and the dispersion of knowledge. This is an approach, which favors a holistic overview of all things, creativity, initiative and imagination." (Kampouropoulou 2011, 60).

The main benefit of interdisciplinary learning is that it promises a wide range of desirable educational outcomes for students regardless of their area of interest and ability to learn. Students are asked to confront their assumptions about the world and to develop a habit of questioning instead of memorizing accepted facts or going with safe solutions. Students are reported to demonstrate the traditional liberal arts skills of precision, clarity in reading, writing, speaking, collaborating and most importantly, thinking (Newell 1994, 35). Other rewards include "improved classroom interest, maturation in personal epistemologies, greater appreciation for the worth of knowledge beyond one's home discipline, and an enhanced ability to navigate and synthesize knowledge in our current information-saturated culture." (Krometis et al. 2011, 74).

One of the most fundamental traits observed in students who partake in interdisciplinary learning is the raised awareness of their own discipline. In successfully designed interdisciplinary courses, students begin to filter the problems presented in their "home" discipline, i.e. design, through the mindset of an engineer, environmentalist, or social scientist. Students also gain an appreciation of perspectives other than one's own; tolerance of ambiguity; increased sensitivity to ethical issues; and an ability to synthesize or integrate. Students enlarge their perspectives or horizons; become more creative through original or unconventional thinking; increase humility or listening skills; and sensitivity to disciplinary, political, and religious bias (Newell 1994, 35). Also, it is important to stress that an interdisciplinary learning does not claim that students will become experts in other areas, but that they will be more aware of the traits outside of their discipline. In other words, "designers do need to know more about science and engineering, but without becoming scientists or engineers." (Norman 2010).

In addition to the advantages students receive, an interdisciplinary approach also benefits institutions. Projects that utilize interdisciplinarity "improve morale in required general education courses." (Newell 1994, 35). An interdisciplinary approach offers efficient introductions to various disciplines without posing a risk of going in-depth, especially for first year students. This kind of pedagogy also offers a relatively low-cost, but "highly effective form of faculty development that facilitates reallocation of fixed faculty costs from under-enrolled department." (Newell 1994, 35).

3.2.3 Specific Influences

Many academics believe that the locus of interdisciplinary learning is the integration of disciplinary perspectives. How interdisciplinarity is being taught, understood, and perceived largely depends on the understanding of the nature of academic disciplines that exist in a particular institution. However, most disciplines that are taught in colleges and universities today are by-products of late nineteenth and early twentieth century reasoning (Lattuca 2001, 23). Lattuca's premise in *Creating Interdisciplinarity* is that the interdisciplinarity depends on how scholars define each discipline individually. Other educators also agree that, "the terrain appears to be one of bottom-up building rather than top-down, yet this whole process continues to be influenced by the legitimate and not-so-legitimate orthodoxies of the established disciplines." (Ingham et al. 2012, 102).

Design as a discipline generally teaches students to specialize. Even in extremely interrelated and somewhat analogous branches such as web design, animation, or interface design, students are often directed towards narrowing down their area of interest and diversification. Introducing the interdisciplinary method into a design classroom can be an alarming thought to some instructors because, superficially, it could interfere with students obtaining a specialization. "The basic concept of interdisciplinary research, it is argued, conflicts with the single disciplinary orientation of academic departments." (Lattuca 2001, 44). Michael Bierut confirms that "in many programs, if not most, it's possible to study graphic design for four years without meaningful exposure to the fine arts, literature, science, history, politics, or any other disciplines that unite us in a common culture." (Bierut 2007, 16).

Although, modern design shaped itself during the twentieth century, it slowly continues to establish itself as an academic discipline. In general, a design educators' expertise drives their choice to implement new teaching methods such as interdisciplinarity. "Faculty tends to make decisions about what to study by assessing their own strengths and interests." (Lattuca 2001, 42). It takes confidence and determination to take risky decisions towards interdisciplinary teaching or any other experimental pedagogy (Lattuca 2001, 42).

Another reason why design faculty closely focus on delivering specialized learning to students is the industry's insatiability for technical skills. "Employers want trained designers, not writers and economists." (Bierut 2007, 16). Perhaps, the truth is that designers do not need in-depth knowledge of economics, literature, or politics; some designers fill their education gaps as they go along, others get away with faking it. "But most of the mediocre design today comes from designers who are faithfully doing as they were taught in school: they worship at the altar of the visual." (Bierut 2007, 16). It is unknown how long this type of education system can sustain itself. One can observe that other university disciplines prepare their students for more than just technical training. Dr. Helfand, President of Quest University Canada — an interdisciplinary university — emphasizes that human resource officers in corporations are not getting what they need from today's graduates. "89% say they want employees who can write and speak effectively and persuasively; 84% say they want employees who collaborate well with people from other backgrounds and job skills to solve real-world company problems. And they want people with advanced analytical reasoning abilities." (Helfand 2012). These figures reinforce the thought that design education should provide students with problem-solving skills beyond visual aesthetics and technology.

As discussed above, design education closely follows industry demands. The industry also creates a belief that design education must follow behind design practice instead of working as an equal partner. However, from an educational perspective, there is a difference between a discipline, "a branch of learning that has a body of knowledge, modes of inquiry, and critical perspectives" and a profession, "an occupation that involves the application of knowledge of that discipline" (Shapiro 2005, 338). The confusion between a discipline and a profession is one of the causes for modern design curricula. The belief that design education must follow industry began in the era when design was a trade activity. "Our trade schools — and there are still trade schools of design in all

countries — do, indeed, follow behind practice. They teach basic skills suited to the needs of the trade, but little else." (Buchanan 1998, 63). Richard Buchanan, an educator in communication planning, interaction design, and new product development, believes that as the design field continues to mature, there is an acute need to teach design as a broad area. To create a system where individuals who come to study design do not have to commit to enter professional design practice. They can study design as groundwork for other types of careers, in the same way students today take foundation classes in literature, history, mathematics, natural and social sciences (Buchanan 1998, 65–66).

3.2.4 Challenges

> "Each discipline acts as if its work occurs in isolation from the other fields. Thus, in the process of earning a single specialized degree, students are limited in their exposure to other related fields. Under this paradigm, graduates do not leave with a comprehensive understanding of energy, and this traditional model retards progress in an increasingly globalized world." (Webber and Kirshenbaum 2012).

Even when the importance of interdisciplinarity is recognized, the coordination and integration of such an approach is difficult (Ingham et al. 2012, 94). A common mistake made by universities is that instead of implementing interdisciplinary methods from the perspective of a thorough reform, they "are simply adopting the interdisciplinary labels without adapting their disciplinary artifacts." (Rhoten 2004, 9). Perhaps, the main reason for such disorganization is a failure to select the right connections among different kinds of work. There is a temptation to organize them around today's broad problem agendas, but this might not necessarily be a recipe for consolidation. "And what of tomorrow's problems? Great research universities must maintain a diverse portfolio that will continually generate new knowledge to address today's concerns as well as to inform challenges not yet identified or understood." (Jacobs 2009, 2).

Another barrier for interdisciplinary learning in various institutions is the departmental discipline-defined curriculum and structure. The institutional reward system, such as grading and commencement diplomas is based on the disciplinary models of research and teaching (Lattuca 2001, 43). While graduate courses often allow for flexibility and promote interdisciplinary collaborations and explorations, undergraduate courses are more strictly designed. "Although successful in broadening and deepening student perspectives, the rigidity of many disciplinary curricula, particularly in the sciences, often do not readily allow for the addition of a non-major multi-course series, rendering this option unavailable to some undergraduates." (Krometis et al. 2011, 74).

On the contrary, interdisciplinarity cannot exist without specific disciplines and departments. If the structure were broken, people would have difficulty deciding what problems are essential. It would be hard to judge the quality and communicate important advances. A serious concern about interdisciplinarity is that any promise it holds depends on the presence of strong disciplines. "Going too far down the interdisciplinary path by ending academic departments, as some have suggested, would be a disaster. Departments teach techniques needed to conduct high-quality research. Disciplines establish a hierarchy of problems." (Jacobs 2009, 2).

3.2.5 Existing Examples

In 2008, the University of North Carolina offered its first courses in a unique program aimed at engaging graduate students in the development and execution of interdisciplinary courses intended to cross the traditional science-humanities divide — developed by doctoral candidates to promote interactions between doctoral fellows from disparate disciplines and to contribute to the broader university community, including undergraduate studies. For example, rather than conveying discipline-specific knowledge in first year seminars, courses now offer a "shared intellectual adventure," providing the ideal home for the experimental classroom. Another example is found in the course *Cheating Death*, which was based on "the pervasiveness of humankind's quest for immortality and the effects of this central motivation on individual and culture-level decisions" (Krometis et al. 2011, 74). It was co-taught by Environmental Engineering, Slavic Languages and Literature, Religious Studies, Genetics and Molecular Biology doctoral candidates. Both students and instructors benefited from the inclusion of interdisciplinary team-taught courses in the undergraduate curriculum (Krometis et al. 2011, 73–77).

Quest University is Canada's first independent, not-for-profit, nonsectarian university of the liberal arts and sciences. Since 2007, Quest offers only one degree, a Bachelors of Arts and Sciences, and focuses entirely on excellence in undergraduate education (Quest at Glance 2012). The Quest model is not graduating job-ready students with specific skill sets; instead, the school encourages students to engage in intellectual exploration and develop a broad understanding of many topics and creative abilities. Quest students must take set classes for their first two years, but they are not typical. For instance, one class, on asymmetry in nature, is taught by a variety of professors from disciplines such as molecular biology, astrophysics, philosophy, psychology and French literature. "The theory is that disciplinary mobility is essential for fostering creativity." (Millar 2012).

The Department of Art and Design at the University of Alberta offers undergraduate students the option to enhance Industrial Design and Visual Communication Design courses with an elective path of study in: business and marketing; engineering; computing science; printmaking; and social sciences. This pathway system gives students the opportunity to gain additional critical skills and knowledge to meet the demands of the new economy (ArtDesign.Ualberta.ca).

3.3 CREATIVITY

"The need to adapt to new environments has been a must for any species to survive. This adaptability depends heavily on the creative capacity to provide new adequate solutions to problems never before encountered." (Villabla 2010, 315). With the current fast-paced changing world, people need to adapt quickly and efficiently. Creativity is often seen as the right solution in a free-trade world to drive this adoption. Creativity delivers new products, new commodities, new services, and new values. Creativity also fosters new, coherent, and better ways to deliver old established values (De Bono 2009, 23). Given that creativity is essential to survive in today's world and move it forward, educational institutions should be the first to incorporate creativity into their curriculum.

Many schools in developed countries began to stress the importance of creativity in their general educational system. "In the industrial nations, where technological and manufacturing jobs are being outsourced to other countries, there is a need for new workers who are creative and innovative." (Saebø et al. 2006, 205). For instance, in England researchers have put creativity on the agenda as a central element in education by claiming, "no system can be world-class without valuing and integrating creativity in teaching and learning." (Saebø et al. 2006, 205).

"Innovation is constantly being cited as the cornerstone of Canada's economic and social future. Creativity, however, is a word that is spoken less often." (Tamburri 2012). Yet, many experts view nurturing creativity as the critical ingredient in turning out innovators of tomorrow. "Although Canada ranks highest of OECD countries on the percentage of university-aged people attaining some higher education, we lag behind when it comes to indicators of innovation, such as patents. One theory as to why: We need more creative graduates." (Millar 2012). There is a need for educators to focus on creativity in schools because in today's world, students need to be trained how to be flexible and adaptive in a variety of types of jobs they make take over their working careers. Creativity is seen as the main mode that allows students to develop this kind of flexibility (Tamburri 2012).

3.3.1 Definitions

> "Before addressing what creativity is, it's useful to examine two things creativity is not: a single distinctive ability and a matter of a talent." (Perkins 1984, 18).

Psychologists tend to define creativity as a mental process, but creativity is as much cultural and social as it is a psychological event. Tipper quotes Lehrer, "One of the most dangerous myths of creativity is that it's a single thing, separate from other kinds of cognition." (Tipper 2012). Therefore, creativity is not the product of single individuals, but of social systems making judgments about an individual's thoughts. Creativity can be understood in the interrelation between three elements: the actor, the domain and the field (Villabla 2010, 318). Consequently, creativity is a social attribution.

Edward De Bono, an author and inventor of term "lateral thinking", sees creativity as a skill and if it is a skill, then it can be learnt and taught. "As with any skill, such as tennis, skiing and cooking, some people will be better at the skill than others." (De Bono 2009, 27). But it does not mean that people cannot acquire a usable level of the skill (De Bono 2009, 27). If based on the belief that creativity is a skill, then it could be trained and learned through a number of teaching tools such as problem finding, information gathering, information organization, conceptual combination, idea generation, idea evaluation, implementation planning, solution monitoring, divergent thinking, problem solving, performance training and many others (Orme 2010, 29).

The most visible undergraduate disciplines that require students to be creative are the arts, specifically the fine arts. According to Pasi Sahlberg, an educator and international expert in teaching for school improvement, global education policies and change, "creative people are normally those who paint, sing, dance,

or invent new things." (Sahlberg 2010, 339). However, other disciplines are equally creative. "Although it is often found in the creative arts, creativity can be demonstrated in any subject or school or in any aspect of life." (Lucas 2001, 38). Creativity is a term that should be defined beyond one single activity and be seen as a combination of different parts of the creative processes that require unique kinds of creative thinking. According to Lehrer, "A pianist in the midst of an improvised solo is thinking very differently from an inventor tweaking a gadget, even though both are in the midst of invention." (Tipper 2012).

The definition of "creativity" is also often confused with the definition of "innovation", but there are fundamental differences. "Creativity is an essential building block for innovation." (Von Stamm 2008, 1). However, creativity alone — the process of coming up with new ideas is not enough for innovation to occur. Structures such as implementation, development, and commercialization make innovations possible. "To be creative people have to think differently. To be innovative people have to behave differently." (Von Stamm 2008, 3). This research study touches upon the topic of innovation, but the primary focus remains on creativity as a backbone to address the challenges of the twenty-first century.

3.0 Creative Traits

[Table adapted from (Von Stamm 2008, 21)]

Applicable to Designers	Not Applicable to Designers
able to fantasize	adaptable
can synthesize	not motivated by money
confident	self-actualizing
curious	self-disciplined
divergent thinker	self-knowledgeable
energetic	sensitive
flexible	sense of humor
fluent	
imaginative	
independent	
ingenious	
intuitive	
non-conforming	
observant	
open-ended	
original	
perceive world differently	
persistent	
question-asker	
risk taker	
sees possibilities	
sense of destiny	
severely critical	
specific interests	
tolerant of ambiguity	

What are the traits of creative people? There are conflicting opinions about what traits constitute a creative person. A recent psychology study that examines creativity styles and personality traits suggests that "to move from problem clarification to idea generation requires a personality make-up that includes such traits as careful, cautious, and factual, while also being demanding, ambitious and desirous of change." (Puccio and Grivas 2009, 253). Bettina Von Stamm efficiently summarizes the creative traits of individuals and emphasizes those that are also applicable to designers (Table 3.0). As a result, designers share the majority of characteristics of creative people (Von Stamm 2008, 21).

3.3.2 Teaching Creativity

Creativity only surfaced as an object of public concern in the mid-twentieth century, shortly after its appearance as a named subject of academic inquiry, chiefly in educational and psychological circles, during the 1920s (Pope 2005, 19). Only since then, have researchers began to develop the thought that creativity is not innate, but acquired. While accepting that creativity can be learned, there are still some people who are generally more creative than others (Von Stamm 2008, 8). Aside from investigating the learning processes of creativity, the main challenge of this research study is to explore how creativity can be taught in relation to design education.

"Creativity can be encouraged, not forced." (Von Stamm 2008, 3). Even if schools accept the fact that creativity can be learned, there are many teachers that feel uncomfortable about the idea of teaching creativity. They argue it cannot be learned, "you are either born with it or not" (Lucas 2001, 38). Instead of worrying whether they are passing their talents to the next generation, teachers should focus on building environments in which creativity can thrive (Lucas 2001, 39).

"Arranging appropriate creativity training and processes in design pedagogy could possibly do much to release students' creative potential." (Lau et al. 2009, 72). Education and training are the most useful methods for improving an individual's creative potential. Although, there is no definitive method proven to

work for everyone, there are many principles and techniques in undergraduate design education that teachers should refer to. They can be classified roughly into four main categories: motivation, identification, fostering, and collaboration. The first principle, motivation, involves encouraging students and should give them more confidence while engaging their sense of possibility. The second one, identification, focuses on helping students to determine their own strengths and weaknesses in different areas. The third principle, fostering, discovers a creative potential and enhances creativity through the process. The final principle, collaboration, is a co-creative process where students can create with each other or their teachers (Saebø et al. 2006, 210, 212).

The success of the first three principles listed above is dependent on the teacher's ability to reassure and motivate, while the last one depends on external factors of collaboration. "Only rarely is one individual able to come up with original ideas that have value without interacting and influence from other people." (Sahlberg 2010, 343). One of the key conditions for more creative schools is a collaborative culture that involves professional co-action between teachers, cooperative learning amongst students and collaboration between various disciplines (Sahlberg 2010, 343). Dr. Gupta, a computer science scholar, believes that the Canadian university system in particular, "should engage society much more in the training of young people." (Tamburri 2012). An interdisciplinary approach could be one means for fostering creativity.

Teaching creativity means embracing experimental learning (Tamburri 2012). Often this also means taking risks and going to unknown areas. "Creativity requires risk-taking and there is not innovation without creativity." (Sahlberg 2010, 343). Unless teachers feel confident taking risks in their work, they will not be able to take risks when teaching their students. In turn, this is only possible in an environment that is based on mutual trust. When trust disappears, fear of being wrong becomes the most dominant feature in schools. Providing learning environments that are free of fear establishes the trust that is one of the main conditions for creativity to flourish (Sahlberg 2010, 343).

This research study takes into consideration that teaching creatively does not necessarily promote creativity. Teaching creatively occurs when the process of learning becomes more exciting, engaging, and effective because teachers use unconventional and imaginative approaches. Teaching for creativity happens, when various pedagogical methods are targeted to promote students' own creative thinking (Saebø et al. 2006, 2010). The main challenge is to teach educators how to be creative because teaching for creativity needs to be attentively fostered.

"There is no universal prescription for creative thinking." (Tipper 2012). Education is great, but it does not necessarily create more talented and creative individuals. Although it is very likely that those who succeed in education are creative, "a high level of education does not necessarily mean high levels of creativity." (Villalba 2010, 324). "There are some people who are just more creative than others" (Von Stamm 2008, 8). According to Villalba, education promotes conformity and non-divergent thinking, and the capacity to generate various answers to the same question (Villalba 2010, 324). Schools have also been criticized for fixed themes and predetermined learning outcomes. Standardization is "the worst enemy of creativity." (Sahlberg 2010, 341).

3.4 EDUCATION FOR THE FUTURE

As western nations continue to move away from the manufacturing of goods and services and concentrate on the production of ideas and knowledge, the creative industries are at the centre of research and development. The term "creative industries" was initially used to describe design, music, advertisements, film, fashion, and other creative professions — these professions are now seen as a driving force of economic growth (Matheson 2006, 55). For example, the creative economy accounts for nearly a trillion US dollars in wages and salaries, roughly half of the total in America (Florida 2008, 2). To support this growth, people need to institute and validate a new social compact including investment in human capital and new approaches to education and learning. "We need to recommit our economy to innovation and our society to openness and diversity." (Florida 2012).

Given that creativity and innovation are driving forces of the twenty-first century, a well-structured educational system that supports and fosters creativeness is crucial. Yet, creative professionals such as designers "continue to be regarded as second class citizens." (Norman 2011). They are seldom asked to take part in major decisions largely because design is still being poorly defined, even by designers. Design delivers value and "design is not drawing pretty pictures of a cottage with hollyhocks outside." (De Bono 2009, 130). Design can also provide "a powerful connective link with many bodies of knowledge." (Buchanan 1998, 66). To involve designers in innovative processes means that designers must be more knowledgeable in matters of the world such as politics, business, economy, technology, and social issues (Norman 2011). "The only persons with skills to be able to identify and correct the root causes of defect are those whose skills go beyond the norms of professional design practice in those areas." (Love 2006). In other words, "we need a new breed of designers" and education is the starting point for this change (Norman 2010).

There are shortcomings to modern design education though. The main difficulty is that it continues to focus on a studio-based learning model to prepare professionals and rarely encourages students to learn beyond technology and visual aesthetics. It is "essentially value-free: every problem has a purely visual solution that exists outside any cultural context." (Bierut 2007, 17). Particularly in Canada, "education and job training are being confused and superimposed on each other just now." (Helfand 2012). Design schools simply do not train students on complex issues. "It is rare in design education to have course requirements in science, mathematics, technology, or the social sciences. As a result, the skills of the designer are not well suited for modern times." (Norman 2010). According to Bierut, American design schools broadly fall into two categories, process schools and portfolio schools. While process schools aim to re-build the Swiss style "semiotic" approach to design, portfolio schools, as the name suggests, primarily focus on graduating students with great technical skills that could be presented in the "book" necessary to get a job. While process schools encourage students to analyze design over the course of four years, portfolio schools are "staffed largely by working professionals who teach part time, who are impatient with idle exercises that don't relate to the "real world" (Bierut 2007, 15). Although students often attain jobs upon graduation, both systems remain outdated for the modern world.

While post-secondary institutions continue to focus on graduating creative individuals that are able to address modern world problems, design education lags behind. To fully achieve creative potential in students, a proposed oversimplified scenario is "give-and-take"— the design discipline should be incorporated into general education, while general education should be incorporated into design studies. Educators believe that implementing design into other disciplines can produce more creative results. "We need much more emphasis on design — for everyone." (De Bono 2009, 71). Design can be a place of intersection in which "insights, methods, and ideas from different disciplines can take root and flourish." (Niederhelman 2001, 87). Secondly, design as an independent field of study needs to embrace and incorporate other disciplines into its education system.

> "As the world becomes more interdisciplinary and our students more diverse, design education will need to address more aggressive methods for integration. Connecting subjects, people, and disciplines is not only timely in relation to professional trends, but necessary if design hopes to find itself closer to the center of the university education model." (Niederhelman 2001, 87).

This research study proposes the idea that the implementation of an interdisciplinary approach in design curriculum can foster creativity in undergraduate design education in Canada. Based on the background information presented here, both teaching interdisciplinarity and teaching creativity are linked together. As there are numerous joining threads between these two large concepts, it is extremely difficult to pinpoint all of them; however, the most defining themes between interdisciplinarity and creativity are: driving forces of modern economy and innovation; functioning under the departmental discipline-defined curriculum and structure; and, requiring experimental and unconventional thought.

The first theme summarizes that there is an acute need for creative talents who can work through various disciplines and adapt to different work environments as has been emphasized by Findeli, Norman, Matheson, and others. In other words, industries need professionals who are also interdisciplinarians to produce innovative solutions. While many countries significantly emphasize that in their education systems, Canada still lags behind. One of the obstacles for innovation is "insufficient interdisciplinary/cross-sector collaboration and partnership generally" between schools and industry. Both "should learn from and collaborate more with the other [...] and value both humanistic and economic aspects of innovation" (Reid 2011, 2).

The second theme emphasizes the fact that teaching methods for creativity, including an interdisciplinary approach are currently characterized by the departmental discipline-defined curriculum and institutional structures. "However, for creative design to be taught successfully, timeframes and structures must alter in order to allow staff and students to develop creative and innovative design solutions." (Spanbroek 2010, 117). Many schools, as Bierut and Wang emphasized are still following a studio-based approach, where students have very little interaction with the real world. This mode of education prepares students to enter the industry by making students "office ready" (Davis 2005). There is a difference between a discipline and a profession that schools must learn to embrace.

The third theme demonstrates that for creativity to flourish using an interdisciplinary or any other pedagogical approach, academics and teachers must engage in experimental and unconventional thinking. However, many teachers do not embrace experimental learning, as it requires more risk-taking which does not necessarily go with the well-defined curricula of some institutions as shown in the second trend. The reality is that "the core principles of the discipline are taught through practice, and presented as part of solution for a specific problem" (Breslin and Buchanan 2008, 39). Presenting pre-designed problems only leads to foreseen solutions, leaving little opportunity for creativity to flourish. However, an interdisciplinary approach promises not only unexpected creative solutions, but also appreciation for other disciplines, deeper knowledge, and an unbiased view of the world.

Design, creativity and innovation move society forward. Based on all the information gathered here, design plays an important in today's world. To say that designers should lead the innovations of tomorrow is a delusive statement; instead, designers should partake and contribute to the interdisciplinary teams that address modern challenges (Von Stamm 2008, 22). Interdisciplinarity is the key to hearing various voices, asking new questions and learning to answer them in a way that no discipline in isolation is able to answer. Introducing interdisciplinary learning into design curricula would help to educate designers that are able to go beyond visual aesthetics and take on the complex issues of a modern world. The next section, *Research Activities (4.0)*, describes all activities that were undertaken to investigate interdisciplinarity and creativity in this research study.

4.0 RESEARCH ACTIVITIES

Creativity and interdisciplinarity are vast research areas that have been independently broken down and investigated by a large number of academics, scholars, and professionals. Both creativity and interdisciplinarity have unique properties and multiple definitions that depend on the environment within which they are being investigated. Creativity is "one of the most used and abused of terms — at one moment invoked to praise a specific technical skill, at another uttered in the most vague and casual manner." (Negus and Pickering 2004, vi). Similarly, "interdisciplinarity has become a buzzword across many different academic subjects in recent years, but it is rarely interrogated in a great detail." (Moran 2010, 1). To obtain more specific definitions, both subjects here are situated in the context of Canadian post-secondary design education. Although the topics remain moderately broad, this specification allowed establishing research activities in a more organized and refined manner.

Incorporating an interdisciplinary approach to promote creativity in undergraduate design education is a rich topic that requires multiple viewpoints. To collect diverse positions for further investigation and analysis, a mixed methods approach including a combination of quantitative and qualitative research methods was proposed. Quantitative research involved collecting data from a nation-wide design educator survey as well as collecting questionnaires from student participants at the final stages of research. Qualitative research consisted of studying secondary information from scholarly publications, as well as conducting primary investigation such as educator interviews and testing. This research study also seeks a balance between secondary and primary sources of information to identify links between creativity and interdisciplinarity.

4.0.1 Secondary Research

As the topic of this research primarily deals with current and future trends, the background information and literature review focused on scholastic and professional opinions, viewpoints, and recommendations from articles and publications within the past two decades. To expand the scope of the research, the scholars whose opinions were used come from design-unrelated disciplines such as psychology, literature, science, business, and others. Synthesizing collected information from non-design disciplines with pertinent research from the design field gives a wider perspective that is presented in the *Context (3.0)* section.

4.0.2 Primary Research

The primary research was the largest research activity in this entire study. It involved a national survey targeted towards Canadian design pedagogues, interviews with design educators, and testing of several teaching methods. Although the research activities were initially planned to be in a linear, chronological fashion, the primary data collection process was carried out in an intermittent way. It required alternating between various stages of research to arrive at a final analysis. For example, if one testing session focused on specific methods provided by survey participants, another session would have further expanded on it, while drawing on new information collected from on-going interviews at the same time. This non-linear approach allowed for more flexibility and experimentation.

4.0.2.1 Survey

The national survey was created to collect a large sample of data from approximately 100 design educators across Canada. It was also designed to include voices from small, medium and large design programs. The anonymous survey was open for participation over the course of two years. While invited to take part in the survey, design educators were simultaneously encouraged to participate in the interviews that followed at a later date. The goal was to record educators' opinions of the current state of Canadian design education. The survey was designed to determine the percentage of design schools in Canada that use an interdisciplinary approach, how such an approach is being implemented into curricula, and what the main advantages and disadvantages of this implementation are. While some design educators also participated in the interviews and expanded on their ideas, views, and concerns further, the *Survey Results (4.1)* section focuses exclusively on the anonymous answers from the survey.

4.0.2.2 Interviews

After collecting general quantitative information from design educators, the next step was to expand in greater depth on ideas presented by the survey participants. The interviews were designed to unfold new information on the use of an interdisciplinary approach and its effect on students' creativity in Canadian design programs. Interviews were mainly conducted in-person over the course of one year. The eight design educators who participated in the interviews came primarily from large-scale design programs.

The interviews were planned as a follow-up to the national survey to further establish material for testing in this research study. As a result, questions were focused on how educators implement an interdisciplinary approach into the courses they teach, specific techniques that educators use to promote creativity, and general opinions about the current state of Canadian design education. The combination of data collected from the national survey and personal interviews have significantly assisted in establishing testing material.

4.0.2.3 Testing

Testing was designed to synthesize the primary research data collected from the survey and interviews. Guidance for the testing process was largely based on educators' recommendations, warnings, thoughts, ideas, feedback, and

attitudes towards the use of interdisciplinary learning and its possible links to creativity. The research methods for this part consisted of participant observation, questionnaires, and analysis of the participants' work.

The principal goal of the testing process was to involve diverse groups of students, allowing for a wider perspective and understanding of an interdisciplinary methods and its links to creativity. All testing occurred over the course of one year and involved students from various sections of the *Design Fundamentals* course at the University of Alberta. The diverse groups of collaborators came from the university, industry, and community. Detailed demographics are further described and presented in *Testing Results (4.3)* section.

A mixed methods approach helped to form conclusions concerning the use of an interdisciplinary approach and its links to creativity.

4.1 SURVEY RESULTS

4.1.1 Survey Description

The anonymous online survey included six questions in total. Half of those were short quantitative questions determining the participant's undergraduate program, whether the program offers an interdisciplinary approach, and if it is beneficial to students. The other half was more extensive, asking participants to share methods for promoting creativity, to list both advantages and disadvantages of an interdisciplinary approach, and to determine whether students are more creative if interdisciplinarity is emphasized in the classroom. (Appendix 4.1 [B]).

As the number of schools that offer visual communication design across Canada is substantially large, the institutions that were invited to participate are those that are recognized by the Society of Graphic Designers of Canada (GDC). About 420 educators from 88 Canadian universities and colleges that offer design were asked to partake. Participants represent institutions that range from four-year university Bachelor Degrees to one-year community college Design Certificate programs. (Appendix 4.1 [A]).

The survey was open to participation for the duration of two years. Although the contact list of design educators substantially remained the same, some demographics may have shifted based on the answers collected from survey and individual interviews. Many educators relocate, instruct in more than one institution or program, and teach design to students who are not enrolled in design programs. Consequently, this survey focused on as many data collection nuances as possible before quantifying and analyzing final results.

4.1.2 Survey Demographics

82 design educators have participated; however, only 79 have fully completed the survey questions. The data presented here reflects the answers from these 79 educators. The majority of design educators, 49 participants (62.0%) teach at four-year design programs, mainly representing university-level design programs. The second largest group, which consists of 13 educators (16.5%), represents university and college programs. Eight survey participants teach at two-year design programs and three educators come from one year design diploma, degree or certificate programs. Six participants (7.6%) represent programs that do not fall into any of the four predetermined categories, these include a five year design degree (visual communication design), one year diploma in design management (graduate) and others. (Appendix 4.1 [C]).

There is an exception with the Quebec educational system that does not fit in the category of a four-year design diploma degree. Students in the province of Quebec who intend to pursue post-secondary education first attend *Collège d'enseignement général et profes-sionnel (CEGEP)*, which translates as "College of General and Vocational Education", before enrolling in any Quebec university. The programs that offer a complete Bachelors degree equal to a regular four-year degree in other provinces, in Quebec are only three years long. (The Canadian Encyclopedia). However, this stipulation does not interfere with the objectives of this study.

Based on the participating demographic, more than half of the design educators represent a four-year design degree. Thus, mainly larger Canadian institutions provide opinions on the interdisciplinary approach and creativity in this research study. The smaller portion of answers comes from three-year or under three-year design programs. This factor is essential to a final results analysis.

4.1.3 Survey Results

According to the survey data, 63 survey participants (80%) responded that their program incorporates an interdisciplinary approach into its curriculum. All of the 63 participants also fundamentally believe that an interdisciplinary approach is beneficial to learning. However, some remained neutral, and 10 percent of participants expressed a concern towards the definition and implementation of an interdisciplinary approach.

Design educators were also asked to explain how an interdisciplinary approach is beneficial to learning. If the institution does not implement one (at least officially), the survey participants were asked to state whether it would be beneficial to their program and in what way. The wide spectrum of answers provided by design educators is summarized into six categories. All the direct quotes in this section come from the anonymous responses, for a complete list of responses refer to Appendix 4.1 [C].

1. Students have a better perspective of design as an interdisciplinary subject

"Design affects [and is affected by] everything. Any border is arbitrary." Design as a field is complex and collaborative. It connects diverse disciplines and draws on many areas of study. Thus, having an interdisciplinary approach in education is beneficial in developing a holistic understanding of design. According to survey participants, design students should be able to develop a comprehensive view on behavioral psychology, social anthropology, business practices, innovation, strategic thinking, and awareness of world issues.

Fundamentally, there are only basic skills the students need to learn to become elementary practitioners, but if educators are to seriously prepare students for the real world, then design should be approached as a diverse medium. The more exposure students get to design as an interdisciplinary subject the better. Incorporating interdisciplinary thinking, theory, and skills, which are transferable in the educational system, gives graduating students an opportunity to move into a design field as well-rounded designers. Students graduate with a better understanding of design as an interdisciplinary practice.

2. Students develop skills that are transferable across disciplines
Interdisciplinary learning allows students to develop and strengthen skills that transfer across disciplines such as communication, problem solving, flexibility or adaptability, and collaborative skills. It fosters a respect of the other disciplines that they will likely work with. Students gain a broader exposure to materials from art, interactive technology and programming, cognition, social sciences, media and games — they experience an education that goes beyond applied design practice. For example, one of the participants identified a design program that incorporates projects with the photography department being beneficial to students. It provides them with an understanding of art directing photo-shoots and an opportunity to work with professional photographers.

While "real" projects provide opportunities to interact with actual world clients, an interdisciplinary education teaches students how to communicate and collaborate with non-designers on a larger scale. In these types of projects, design students are taught to work with individuals from many roles. Students get to understand the strengths of other areas and understand how their expertise contributes to the overall project. Students brainstorm solutions with other disciplines and gain a broader perspective on how design relates to the greater community.

3. Students improve critical and conceptual thinking
An interdisciplinary approach gives design students a greater breadth of tools with which to communicate. It exposes students to different thinking approaches and problem solving at all levels from ideation to innovation. Particularly, through the process of working on holistic design approaches, students develop stronger critical and conceptual thinking that is essential to any profession or discipline.

Critical and conceptual thinking are especially encouraged when design is taught beyond technology and as a tool for problem solving. When students are introduced to multiple interdisciplinary positions, they become better thinkers, conceptually and technically. Also, allowing students to focus on the process and not specific solutions, enhances students' capabilities. It helps to establish independent ways of thinking and seeing the world before moving into designing artifacts. For instance, one of the design pedagogues describes the path of proper design education in three basic steps — first, students learn how to think; second, students work with others; and third, students do effective design work.

4. Students become more knowledgeable of the industry
Aside from teaching creative, analytical, and conceptual thinking, technology, business, social and cultural issues, the main objective of major institutions is to prepare students to enter the design workforce. An interdisciplinary approach is one of the methods that actively introduces students to new perspectives and gives insight into the reality of professional visual communication design. Students get a chance to understand the social context in which they will be practicing and it is necessary for a trans-disciplinary world and workplace.

"The world does not work in a vacuum, and specializing tends to magnify specificity." Without incorporation of other causal effects, perspective may be lost. Interdisciplinarity is the reality of the profession today. According to some design educators, it is also a future of professional design practices. Research, writing, design, photography, and new media skills are all essential in the field of communication. By working in multidisciplinary team environments students gain more career options.

5. Students become well-rounded designers
An interdisciplinary approach is helpful in creating good designers. According to survey participants, to "design" is to "create an experience" and the better the designer understands the human experience, the better the output. Creating experiences is different from gaining the skill set that young designers learn at school, which is often similar wherever one studies. Students can perfect their skills in typography, colour theory, layout, and expand their knowledge on design history and theory, etc., but what will distinguish them as creative and good designers is additional learning outside of their discipline.

Educators unanimously agree that the design field is versatile and encompasses multiple disciplines. Some also believe that it is the nature of design to bridge the gap between art and sciences. This requires designers to have artistic skill and to be knowledgeable of scientific theories and methods. Further research and learning helps students to grasp the technical and social components related to the design of a given artifact. Through this process, students also learn how each component adds specific value to a final communication design piece.

6. Students demonstrate motivation and creativity
While the objective of this study is to document the links between creativity and interdisciplinarity, only four survey participants (5.1 %) explicitly acknowledged that interdisciplinary learning produces more involvement and creative results.

"Creativity begets more creativity and working across different disciplines, media and dimensions opens the door to many more ideas and ways of thinking about things." It is common for design students to get locked into one creative style, mode or frame of reference, or stay within their boundaries. An interdisciplinary approach advocates them to step out of their comfort zone and experiment with new ideas and methods. This produces more motivation, enthusiasm and involvement in the process and leads to more creative final outcomes.

The majority of survey participants agree that an interdisciplinary approach is beneficial to learning; however, about 10 percent expressed concern towards interdisciplinary learning and its role in modern design education. They raise valuable questions about the nature of an interdisciplinary approach and its use in Canadian design schools. According to them, **the interdisciplinary curriculum...**

1. Should be optional
An interdisciplinary approach is beneficial to overall learning and development as long as it is not occurring "at the expense of the primary

field of study". It should be optional since there are many "cross-over fields emerging in most disciplines" and the lines are slowly blurring. It might be disadvantageous for a serious and well-defined career.

2. Is a substitute for "traditional" schools
The benefits of an interdisciplinary approach could be further explored, but "the structure of curriculum remains essentially traditional." Many programs are immobilized in the past and have languished for years with no clear focus or vision for the future. Design institutions suffer greatly from trying to be "portfolio schools" and "not succeeding at that", when it should be more about process, concept and innovation with materials.

3. Might not work for specialized programs
Interdisciplinary learning requires multiple subjects to engage and collaborate. Community colleges and technological institutes that function in fast-paced learning environments primarily focus on graduating tech-savvy specialists. Those institutions often offer a few specialized diplomas and are unable to incorporate collaboration between various disciplines in short periods of time. For example, "in a one-year program [interdisciplinary learning is] hard to implement as there are already time pressures."

4. Might not be suitable for the whole program
"An interdisciplinary approach works for some subjects within visual communications but may not necessarily be appropriate for every aspect of the curriculum." If such an approach is incorporated through specific courses but not throughout the whole program, it fosters collaboration and the skills required for participatory models within the design process.

The initial reaction of the majority of design educators is that an interdisciplinary approach is beneficial. However, after encouraging participants to further expand on their thoughts, a clear list of challenges has appeared. This adds further perspective concerning interdisciplinarity to this study. Based on the range of opinions collected, the study objectives become more obtainable in terms of future testing and research.

This survey also identified the practicality of an interdisciplinary approach in design curriculum by asking participants to list advantages and disadvantages. The last two questions that required extended answers were optional. Hence, the response rate to this particular question was 89 percent, a total of 72 participants have shared their views. There were 59 answers describing advantages, 47 answers describing disadvantages, and six were neutral. There is a minor overlapping with answers because some participants chose to expand on advantages and disadvantages in their earlier responses, but it does not change the final results (Appendix 4.1 [C]).

ADVANTAGES

Design educators have previously stated six main benefits of an interdisciplinary learning: better perspective of design as an interdisciplinary subject; development of skills that are transferable across disciplines; improvement

of critical and conceptual thinking; better knowledge of the design industry; students' well-roundness as young designers; and, students' motivation to be creative. To avoid repetition, this section solely focuses on the advantages of implementing an interdisciplinary approach into a design curriculum.

A Fulfilling Educational Experience

The majority of survey participants agree that an interdisciplinary curriculum is essential to design studies. According to survey participant, "If one believes in this notion of design, then it follows that an interdisciplinary approach is always advantageous for the design student. This view is not new. Almost 100 years ago Walter Gropius argued that students at his Bauhaus school learn both artistic and technical aspects of making."

An interdisciplinary approach provides students a broader educational experience, rather than self-contained training. "Myopic vision is not a goal of education, it's expansion and connecting those learned skills be it conceptual, cognitive, production or collaboration needs to be looking in all directions, not just one." When subjects are being introduced interdisciplinarily, it brings richness to the design research and creation processes that does not exist otherwise. Students are acquainted with subjects, methods and people they would not normally come in to contact with. The expertise of people working in other areas enriches students' learning experiences. And this leads students to more fulfilling educational experience.

Preparation for After-School

> "This approach gives students permission to try things differently. Consequently, it also exposes them to a wider world of opportunities — both in terms of concepts and applications, but also in terms of employability. They are more inclined to see design's strategic side and the greater roles it can play in the world at large. And it increases their vocabulary design-wise, but also in relation to other industries. This in turn leads to the erasure of defining lines between whose role is what when you can try anything!"

An interdisciplinary approach better resembles the "real world". "Outside of school, the world functions as cells, or parts of wholes. Permeability between cells, interchange and knowing where you fit in — all contributes to an expansive, inclusive and deeper understanding of things." Interdisciplinary learning offers students a chance to work with and learn from the practices of other disciplines and their way of thinking and seeing the world. Since, interdisciplinary work reflects more accurately the conditions that most designers will be working under, graduates have a broader range of experience, which makes them more employable. Engaging with external clients or sometimes, former students, is motivating. A mixed background of faculty members also contributes, as they are more willing to team-teach on courses or between courses.

According to one of the educators, students want to go in many different directions with their diploma, such as industrial design, graphic, crafts, illustration, web design etc. In turn, educators need to be prepared to help students get there. If designers are not well versed in the employment of interdisciplinary approaches and methodologies they are more likely to fail their clients' objectives and users needs.

Learning to Think

An interdisciplinary approach teaches students to think. According to one of the survey participants, "My idea of interdisciplinary approach could be inaccurate but I do not see how you could teach creative thinking, problem solving and idea generation without using tools and approaches outside of the design principles and elements. They have to see everything as creativity and design, man made and otherwise." Although the process of mastering to think is highly individual and varies from student to student, 37 percent support the idea that an interdisciplinary approach fosters problem-solving, critical, creative, and design thinking.

Problem Solving

An interdisciplinary approach moves design solutions beyond style and aesthetics into areas that allow for research, testing and establishment of validity. Putting students in touch with other disciplines broadens their awareness and understanding; promotes investigation and lateral thinking; and helps them understand the context and application for design problem solving. Students are often lost when it comes to a problem-solving process, but "it is better to be lost than found because when you are lost, you are looking." As a result, an interdisciplinary approach provides opportunities for students to shift focus from execution to rationalizing design approaches taken.

Critical Thinking

Many students are geared towards employment requirements and are not fully aware of the importance of critical thinking skills. An interdisciplinary approach helps students move beyond the confines of how to conceptualize a project, from traditional to more non-traditional points of view. Students are introduced to new perspectives, need to expand their beliefs of what visual communication is or can be, and encouraged to challenge their pre-conceived notions of what they should be learning.

Creative Thinking

In successful cases, interdisciplinary activity creates a feedback loop that stimulates creativity and gets students thinking "outside the box" of their expectations. It fosters potential in students by taking them into unexpected areas, teaches them to operate outside standard ways of thinking, and develop unconventional modes of thought. Having broader perspectives first leads to creative thought, then to originality of final design solutions, and finally ends up shaping innovations.

Design Thinking

Another advantage of interdisciplinary learning is using a holistic approach to the problems and bringing expertise to the design table. It helps design thinking, a process of practical, creative all-inclusive problem solving, to grow and extend its usefulness into new areas. According to a well-accepted definition, some of the main characteristics to look for in successful design thinkers are: empathy; integrative thinking; optimism; experimentalism; and, collaboration.

- ***Empathy***

  Imagining the world from multiple perspectives — those of colleagues, clients, users, and customers by taking a "people first" approach, design

thinkers can ideate desirable solutions and meet explicit or possible needs (Brown 2008, 3). Interdisciplinary learning challenges students to look at a design problem from several viewpoints and also provides multiple opportunities to succeed based upon students' strengths. As a result, students see design holistically and approach problems from cultural perspectives.

According to one of the survey participants, "Designers are form builders. Problem sets we are often given revolve around different and separate communication vehicles. Each design discipline in itself is valuable, but it is important to any designer how certain other disciplines function in order to inform their own work."

While working on projects with other disciplines, students learn to tackle problems from cultural perspective. "Every discipline is a different culture." Hence, the potential to learn new methods and cultural approaches is enormous. Students working in teams usually come from diverse cultural backgrounds that also contribute to new directions.

- ***Integrative Thinking***

  Interdisciplinary learning provides students with broad opportunities to engage with a variety of learning styles. Students learn to think more, from multiple points of view, and approach a subject from multiple angles. An integrative approach is just one of many styles students use in their overall design thinking process. Such an approach involves willingness to go beyond analytical processes, to see all of the prominent aspects of a problem and create novel solutions that improve on existing alternatives. (Brown 2008, 3).

  "Professional design activities do not take place in a silo, or vacuum, [they are] interdisciplinary by nature." By engaging integrative thinking, students are able to build confidence in meeting the challenge of oftentimes complex, cross or multi-disciplinary problems common with today's clients.

- ***Optimism***

  "Optimism" in design thinking refers to the assumption that no matter how challenging the constraints of a given problem, at least one potential solution is better than the existing alternatives (Brown 2008, 3). An interdisciplinary approach allows students to move away from specialization that "only serves to form small robots that can only do one thing at a time." The interdisciplinary approach stimulates new angles, curiosity, knowledge of how to approach projects. Students are more engaged, enthusiastic, and motivated to work on their projects and students develop new interests.

- ***Experimentalism***

  Another advantage of an interdisciplinary approach is its openness to, and adoption of experimental education. Experimental learning offers students a more risky, creative approach to design that is less rigid and encourages conceptual investment in projects. When students forget about conventions, technology and simply get off the computer, "they become unfrozen". According to one of the educators, having parameters

frees students up, "Imposed limits always get them moving, because there are suddenly things they can not do, whereas computers boggle them because there is almost nothing they cannot do."

- ***Collaboration***
  "One must not lose sight of the important disciplinary knowledge which must be learned, so that students develop deep skills in their discipline of choice and will have the skills to practice upon graduation. However the breadth that interdisciplinary learning brings, means that students learn not only contextual knowledge and skills, but also learn important collaborative skills with students or professionals in other disciplines — an important part of any design practice."

  Interdisciplinarity fosters an inclusive learning environment which gives students increased opportunities to participate and contribute to the collective knowledge of the group. Teamwork stimulates exchange of ideas and reveals strengths in individuals to share with classmates. As a result, students improve their skills in collaboration, communication, and develop an understanding of responsibilities within a work team or with clients.

NEUTRAL

Six design educators have provided neutral answers. Those educators could not list advantages and disadvantages of interdisciplinarity because some of them have never taught or have a very little experience using this approach, and others have pointed out that the question is too broad. One of the educators has also made a point about the definition and structure of this survey, "You need to ask your respondents to describe what interdisciplinarity means to them. Else you will get answers framed in a wide variety of ways and won't have the needed grounding frames for those explanations." However, a wide range of definitions in the survey helped to broaden the scope of investigation and allows for new directions to take place.

DISADVANTAGES

About 47 answers (60%) describe disadvantages of an interdisciplinary approach. This number appears quiet high in contrast to the few disapprovals in the previous section, where educators were asked to describe benefits. Five major disadvantages of an interdisciplinary approach that came from the survey results are: lack of focus on one discipline; hard to organize from educators' perspective; "real clients" tendency to exploit, students' inclination towards focusing on trade; and, class dynamics and individual student capabilities.

Lack of Focus

A disadvantage of having an interdisciplinary approach in the design curriculum is lack of focus. This includes lack of concentration on a major discipline and lack of direction on technical and practical skills necessary for the industry. Foremost, time constrains do not allow students to work in-depth on the assigned interdisciplinary project. The reality is that students do not have time to be great at everything. Often, they only drill through outer layer concepts and do not dig down deep into the design field. Secondly, students may become involved with certain topics and disciplines, which they have limited understanding or background with.

Primarily, an interdisciplinary education enables graduates to work in multiple fields and thrive in collaborative teams because they have been exposed to a variety of domains, but they may lack major expertise or practical design skills. On the other hand, an interdisciplinary approach has often been misunderstood by the industry. Some students miss specific sets of skills and are under-prepared when leaving school; and some just lack "that singular marketable skill that will get their foot in the door." Those students who do not get needed skills are often able to find collaborators to execute the tasks.

Hard to Organize

"Some students, instructors, and practitioners still seem to have some very narrow mid last century modernist ideas about design, its role in the world, and the range of topics that could and should influence it. It seems to rest on if they see design education as job training or an arts education." This is one of the 15 more radical views expressed by design educators, who shared their concerns on why some institutions deviate from interdisciplinary learning. According to them, it is difficult to implement, as it requires extra effort, time, and knowledge from the faculty as well as flexibility of departmental structures.

Extra Effort

The implementation of an interdisciplinary approach requires enormous effort and dedication from the faculty. First of all, educators who are dedicated to a quality education and open to an experimental pedagogy, spend much of their time course-planning and fitting in the interdisciplinary work with the "regular graphic design" curriculum. Some students might not "buy in" because the proposed project may appear quite radical from anything they have experienced in studio-based courses.

Educators also need to actively engage other disciplines and collaborators for interdisciplinary learning to happen. The logistics of an interdisciplinary project can be quiet challenging due to the availability of faculty and students outside of the design department.

Time

Design as a discipline is very concentrated. Some design courses are full of theory and practical work that students must acquire over short periods of time. Interdisciplinary learning is more time consuming than a regular (or so-called linear, singular) approach, since it requires a time investment to understand the other discipline. Inquiry based teaching also means more uncertainty in projects, which also means more time. This can be challenging for both students and faculty. According to one of the design educators, "Intense programs I teach in, which have classes covering a very wide range of subjects in a short time, it's very difficult to set up any kind of interdisciplinary activity and/or fully explore its potential because of pressures on time and the sheer volume of information they have to take in; if students need more time to explore and experiment they may actually be discouraged by not having enough time to do so at the speed at which they need to do so."

Knowledge

An interdisciplinary approach requires instructors to have in-depth knowledge and to be specially trained. Instructors need to be well educated

in numerous areas outside of their specialty and keep up with current advances across many fields. Instructors who successfully incorporate non-linear approaches usually have solid academic backgrounds and practical experience, while instructors who come from more narrow-profile backgrounds focus on delivering skill sets to their students.

Departmental Structures

Many design programs are simply not supportive of interdisciplinary learning due to institution politics and management issues. Many institutions choose to go with "prevailing (and antiquated) teaching strategies which have been in place for decades." Students and academia tend to "to think/work in silos". As a result, an interdisciplinary approach is seen as a challenge to the entire design curriculum structure.

"Real Clients" Exploit

Although interdisciplinarity has multiple definitions, the one that has been presented to the survey participants states, "For the purpose of this study an interdisciplinary approach refers to involving disciplines outside of visual communication design programs, including other areas, disciplines, professions and real clients, to participate in the design process." In other words, real clients and professionals outside of the design discipline collaborating with faculty and students on projects. Although only three survey participants have stressed the disadvantages of working with real clients, those reasons are important to this study.

Some design educators believe that involving real clients in a project is disadvantageous because of the imbalance between curriculum requirements and the client's needs. It can take the focus off the intended lesson and onto the requirement of responding to a client's unique demands. There is a thin line between learning and fulfilling commercial initiatives. Therefore, involving real clients needs to be done in a course where the students are experienced enough to be able to respond in a variety of ways, and the process itself is considered to be part of the learning experience.

Students Want to Learn the Trade

Many students are resistant to interdisciplinarity and prefer to focus on design specifically, possibly limiting both their capacity to learn and their value as a designer. Some students feel overwhelmed or intimidated by processes unfamiliar to them, while others seemingly are satisfied in only learning the technical side of design — treating it as a trade. It becomes a challenge for an instructor to convince students they need to consider more than strictly bounded instruction in a specific technical skill in a particular course, but to think instead of how these technical skills are embedded in a broader design process.

Class Dynamics and Student Capabilities

Interdisciplinary learning requires students to be more mature and independent. As three design educators pointed out in the survey, "for first and second year it might be too much too soon". Hence, well-designed interdisciplinary learning usually takes place when students have enough theoretical knowledge of design and refined technical skills to execute projects in a professional manner. According to 12 opinions (15.2%), interdisciplinarity is also highly dependent on collaborative skills, class dynamics and individual capabilities.

An interdisciplinary approach often involves collaborative work, which can be difficult for varying personalities. When working interdisciplinary, students in each discipline sometimes have difficulty relating to and understanding the approach of students in another discipline. Many students have difficulty seeing the connections and they struggle to find a design solution, which leads to frustration.

Depending on the class dynamics, it may take a longer time to achieve focused results. Disadvantages might include more potential for projects to become unfocused or students to feel overwhelmed by information and possible design directions. Helping students recognize their creative potential is also crucial to participation. Depending on the student, they may not enjoy team activities, and prefer to work alone.

Another disadvantage of an interdisciplinary approach is that it takes more management of individual students, and not all students are equally capable of engaging in it. Ironically, students who do well in design classes generally may find an interdisciplinary approach more frustrating than average students. Those good students usually have a limited sense of what they are "supposed to be learning," in particular in the first and second years of their degrees, unless they are given precise and clear directions. Once they have seen the results, though, it is easier to get them to "buy in" to this approach.

Creativity is difficult to measure or quantify, but it is possible to identify which methods provoke new and unconventional ideas in students. Collaboration in general, whether interdisciplinary or discipline-defined, is often seen as a condition for creativity and innovation. "Only rarely is one individual able to come up with original ideas that have value with-out interacting and influence from other people." (Sahlberg 2010). Collaborating and being exposed to a wider range of disciplines can produce innovative results.

The main challenge of this research study is to identify whether students are more creative and innovative while tackling interdisciplinary projects as opposed to projects that are limited to a studio-based approach. In both the survey and interviews design educators were asked, "Do you think students are generally more creative while working on the interdisciplinary projects?" Although the majority of survey respondents, 43 of 79 participants (54.4%), claim that students are indeed more creative, five design educators (6.3%) do not see any connection, and 31 design educators (39.3%) expressed their doubts. Since a few short replies such as "Hard to say", "Can not compare", "I cannot say one way or the other" are quiet undetailed, they are classified under the "Maybe" category.

A majority of survey participants believe that interdisciplinary learning has positive effects on students' creativity. Since the listed links between creativity and an interdisciplinary approach are large, all the affirmative answers provided by survey participants are summarized under five main themes: conceptualization beyond the comfort zone; experimentation; unique inspiration; communication skills and collaboration; and, curiosity and new interests (Appendix 4.1 [C]).

Conceptualization Beyond the Comfort Zone

Often students stay in their comfort zone if the project is limited and can only be applied to one specific discipline. The possibility of more interesting results happens when students go outside of their chosen field. They can see solutions to problems that those who are limited to the field pass-by without even noticing. "While appropriation will always be a part of learning, the ability to birth new ideas is greatly enhanced by stepping outside one's usual palette." An interdisciplinary approach pushes students to engage in broad critical and contextual thinking, problem solving and idea conceptualization. Students learn to acknowledge priorities — creative as much as technical or budgetary — arising from other parts of the production process and other nodes in a production network. This inspires the improvisation that is at the heart of real world design challenges.

One of the design educators, who specializes in teaching graphic design in an institution that is primarily focused on the technical side of web and multi-media design, describes the following experience of students going beyond their comfort zone. This educator has recently encouraged students to use one of the major projects from one class as a joint project with another class of their choice that focuses on teaching specific computer programs and tools. The educator observed that "a small number of students have been able to go far beyond what I expected them to be able to achieve (and I suspect beyond what they have expected to be able to achieve), because they have had the support to simultaneously develop ideas and execute them."

Experimentation

"There is more exploration in these type of projects and the exploration process often leads to creative thinking" — according to one of the survey participants. With regard to encouraging students to actively engage in broad critical and contextual thinking and problem solving, ongoing evidence suggests that interdisciplinarity best supports that engagement. Broadening the scope of investigation, integrating theories and concepts from other disciplines expands the range of possibilities for solutions.

One of the survey participants notes that students are always creative, but they need a little push to experiment. "As soon as they are off the computer — they become unfrozen." Students realize that computers give them freedom because they are comfortable working with technology, while sketching gives them parameters and make them more aware of the limitations. When students break out of the expected and are forced to see things from many different viewpoints, that is when they are able to focus their work in a more conceptual way the most. Another educator has also found that students think more "outside the box" when they are not "designing", or concentrating too much on the visual outcome. When involving other disciplines students learn to think about the problem from different perspectives.

Unique Inspiration

In interdisciplinary projects, students are encouraged to seek inspiration from areas not necessarily related to the taught course. Those students who go beyond their chosen field often achieve better results. They have to move beyond their learned methods to create new unique ideas. One of

the educators uses Alfred Weger as an example of a true interdisciplinary scholar — an astronomer who looked at geology and theorized plate tectonics. According to another educator, "An interdisciplinary approach seems to circumvent preconceived notions of a solution to a creative problem." Since there are more options available and broader range of experience to draw from, students get more diverse ideas, make creative decisions, and get exposure to a richer context for creative work.

Communication Skills and Collaboration

Interdisciplinary projects generally require creative cooperation of all the group members to meet the needs of a broader context. Students often arrive at solutions they would not necessarily have arrived at on their own, or from only using a discipline-specific approach. Hence, through the process of collaboration on interdisciplinary projects, many students grow not just their communication and team skills, but also their creative potential. When students are asked to work with other disciplines, they are more likely to communicate their ideas in an accessible and comprehensible way.

Curiosity and New Interests

"We are all creatures of many interests." Approaching a project with a process that incorporates interdisciplinary research and visual experimentation can offer more avenues for students to find personal engagement with the project, encouraging them to insert more of their own experiences and interests. This engagement often results in enhanced creativity. One of the design educators quotes Mamoru Oshii, "Overspecialization breeds in weakness". The same educator believes that it would be foolish for students to leave school believing that they can confine themselves to one sphere of knowledge, turtle up, and still function well with other creatives. Interdisciplinary projects offer the training that enables students to think more creatively by allowing them to broaden their focus to other areas of expertise and interest. During this learning process, students also develop autonomy. As a result, graduates are more curious, stimulated, interested, and prepared for the future challenges.

The participants that are doubtful towards the use of interdisciplinarity raise new questions about the nature of an interdisciplinary approach, in particular its use and its link to creativity. The concerns are summarized under five categories: definitions of creativity; creativity and the project brief; thoughtfulness and creativity; individual learning experiences; and, other learning factors.

Definitions of Creativity

Many design educators had trouble answering the question because of the indeterminate concepts of "interdisciplinarity" and "creativity". Some educators define interdisciplinary as a term to mean drawing upon influences from other disciplines and it is just one of a numerous successful approaches to creativity. Others believe that all projects are interdisciplinary, but the majority agrees that creativity has multiple definitions and it is merely possible to measure creativity in individual students.

Multiple Definitions

"Quantifying creativity is problematic." Creativity demonstrates multiple meanings and it is hard to determine whether students are more creative based on a single definition. It is full of potential ambiguity. According to survey participants, the two general definitions are that creativity is not a subject, and creativity is a skill.

Creativity is not subject to interdisciplinarity, although innovation may be. Interdisciplinarity may be contributing to the required re-framing which is necessary for creativity, and thus the concept of "more creative" arises. Educators mainly encourage innovative thoughts, ideas, actions, and resolutions to design issues. An interdisciplinary method appears to be more engaging, but even that depends on how a project is structured. Consequently, innovation stems from interdisciplinary investigations, resulting in the approach defining creativity, and not the other way around.

Creativity is a skill. By creativity, some educators mean, an improvement in the projective competence, generative capacity and novelty at the front end of the design process. Based on the outcomes from the skill, creativity could be taught, learned, measured, and assessed.

Measuring Individual Creativity

Students' creativity is an internal state that is beyond sight. Educators can only comment on the outcome of the student work, but even then it is hard to assess. This is a complex process and other variables such as individual differences, time management, group dynamics, classroom climate, previous experience, tools at hand as well as the nature of the problem have an impact on students' creativity. For example, one student's solution to a coding program could be extremely creative, while another solution to an interdisciplinary project could be mundane. Although, interdisciplinary learning exposes students to the breadth of creative options, many educators are unconvinced that students are more creative, while working on those specific projects.

Creativity and the Project Brief

Even though the majority of respondents believe that an interdisciplinary approach can foster creativity, it also depends on the parameters of the brief. Students are generally more creative if the nature of the project requires creativity. The more "wicked" the problem, the more varied the processes required to address the issue and the more creative the responses are.

Thoughtfulness and Creativity

"Creative thinking does not necessarily go hand in hand with interdisciplinary projects but, because they challenge complex thinking it can develop more critical thinking skills, which usually lead to more relevant and informed decisions." Students are not necessarily more creative, but certainly more thoughtful, while working on interdisciplinary projects. Many young students think narrowly, so putting them in touch with other disciplines broadens their awareness, understanding, and the breadth of creative options.

Many design educators claim that they use an interdisciplinary approach to broaden students' awareness outside of the design discipline. According to one design educator, "I do not use interdisciplinary methods to make my students more creative, I use them because it gives them the best tools to approach and solve a problem. It makes them more effective designers but doesn't necessarily make them more creative or innovative." Students learn to create differently and develop deeper insights, which leads to a more enhanced and richer work.

Students also intensify their understanding of the design discipline, which makes them not better creatives, but better professionals. New challenges to think arise, while working on interdisciplinary projects, and students learn to apply fresh solutions to a varying set of criteria. This might lead to creative solutions, but not necessarily because such activities may be too pragmatic.

Interdisciplinary learning also provides a breadth of creative options to students. Students become aware of individual methods that make them more expressive. Their creativity becomes more focused because it is strategy-based and does not rely on "happy accidents" or random inspiration. Because the outcomes of the projects are not predetermined, students need to focus on the problem itself before they can generate solutions. As a result, students become more resourceful and think of influences from various aspects that they would most likely miss without research.

Individual Learning Experiences

"Creativity is dependent on the individual and creatives tend to apply it to whatever task they are provided." Approaching a project with a process incorporating interdisciplinary research and visual experimentation can offer more avenues for students to find personal engagement with the project, inserting more of their own experiences and interests. This engagement often seems to result in enhanced creativity. However, it is up to individual students to engage with the projects.

On the whole, some students who participate well and engage in interdisciplinary projects, tend to be more creative. This group of students think and work beyond their skill set and accept a challenge, take risk as part of the design process, independent of their technical skills and abilities. Other students are often intimidated by what they do not know or understand about a discipline that is not their major field of study. They only open to interdisciplinary learning, if they feel comfortable technically with the mediums they are using. Otherwise, the unfamiliar causes students to go back to default. But if educators continue to bring the creative process into focus, they prepare students "to be more creative when approaching any project they do."

Other Learning Factors

"I do not think students are more creative when working on interdisciplinary projects, but I do believe them to be just as creative." It is true that creativity takes place in a collaborative environment whether that is interdisciplinary or not. However, some students do not push for the optimal design solution, while working with others. Various influences such as group dynamics, people's skills, and workload will also influence creativity. "Creativity is not

generated by the end product or necessarily the subject, creativity it is part of the process." Certainly, influences from outside of graphic design realm would bring in a completely different set of ideas, new viewpoints, and catalysts for idea generation. Having professionals, outside speakers, presenters, and experts engage with students about their particular field of expertise allows students to gain a different perspective about the subject, but these people might not be fostering creativity.

As the majority of design institutions continue to use the studio-based approach as a standardized curriculum model, the main cross-contextual stimuli that are used to promote a creative process are: notes, diagrams, and models. (Wang 2010, 175). In total, there were 285 responses to the question, "What in-class activities do you use to promote creativity?" The reason for such a high response rate is that the most used methods, based on preliminary literature review, were systematically presented in the survey as the options. Participants were asked to select more than one, if applicable. 242 responses belong to predetermined survey options and 43 responses were classified under "Other", where survey participants chose to share the methods they use in a more detail.

Predetermined survey options consist of brainstorming, mind mapping, drawing/sketching, mood-boards/collages. According to 73 responses out of 242 (30%), the most popular method used to promote creativity in Canadian design classrooms is brainstorming. The second most popular approach, presented by 68 responses (28%), is drawing or sketching. A third method is mood-boards or collages, based on 52 responses (22%). The least common method, according to 49 answers (20%), is a mind-mapping tool.

In addition, the survey takers were encouraged to provide other methods they believed were valuable. Even though there are numerous overlaps in the answers, six major themes that emerge from the 43 answers are: research; group work and games; visualization; critiques and presentations; and, physical activities. Miscellaneous answers are grouped under the "Other" category (Appendix 4.1 [C]).

RESEARCH

Research is another core method for promoting creativity in the design classroom. According to one of the participants, "virtually every in-class activity is used to promote creativity, including, researching and defining target audience(s), interviews, group discussions, process mapping, prototyping, user testing..." Research activities consist of: conceptual development, design processes and strategies, writing design rationales, critical thinking, juxtapositions, rating "Matrix", "rule-based parameter collision", etc. According to one of the responses, research also consists of visual search such as looking for inspirations, and analysis of what already exists on the subject to develop. This also includes primarily research, such as visiting sites and then sharing inspirations from designs, shows and exhibits. Another participant also mentions the reading of critical theory and then applying theory to experimental projects.

GROUP WORK and GAMES

The most common method suggested by the survey is group work and games. This includes participatory activities such as peer teaching, role playing, card sorting, drama, *think alouds*, open group discussions, ice breakers, personality testing, various games, physical enactments and other. One of the design educators also bases class activities on Edward de Bono's "How to Have Creative Ideas" and *IDEO cards*.

VISUALIZATION

Various visualization techniques are also important in promoting creativity according to nine responses. Visualization includes: sketching models, rapid drawings mixed with writing and collage, creating interfaces, drawing thumbnails, brainstorming "trees", keeping visual diaries, photographing and collecting *objets trouvés*, analog drawings, creating metaphors, visual rhetoric, the *SCAMPER* technique, pushing for many possible solutions before choosing one. One of the educators in particular, uses all the following methodologies: *free discussion*, *blue sky approach*, *nothing is wrong*, *your opinion is valued*, *this is the opportunity to test your voice and your ideas*, and many others.

CRITIQUES and PRESENTATIONS

Critiques and presentation also play an important role in promoting creativity in design classroom. According to the responses, critiques involve idea exchange, small and large group discussions, and debates. Presentations consist of traditional or mini-presentations, and guest speakers or critics who both speak and participate in class with students.

PHYSICAL ACTIVITIES

Although some games could fall into the category of physical activities, this category refers to a pure physical involvement. This includes: taking a walk, going for a site-specific tours, attending conferences, and even coming up with an interpretive dance.

OTHER

There are also few miscellaneous answers that do not fall into any category listed above. One participant believes that the options offered in this survey are too narrow and his/her list would have more than 50 entries, including the ones proposed in this survey. According to one of the participants, "as an extra incentive, I attached certain percentage of my project grades to innovative/creativity. By making innovation an explicit requirement of a project, students are more motivated to try something new. Additionally, I praise students that try something novel — even if they fail."

4.1.4 Conclusion

In addition to data collected from the survey, design educators who participated in the interviews have further expanded their ideas on methodology for promoting creativity. Expanded views of participating design educators are presented in *Summary of the Interviews (4.2)* section of this research paper.

4.2 SUMMARY OF THE INTERVIEWS

4.2.1 Interview Description

The recruitment process was electronic. Possible interviewees were invited to participate in the same e-mail in which they were asked to complete the national survey. 420 educators from 88 Canadian universities and colleges were invited. While about 20 educators initially expressed an interest in participating in the interviews, only eight were able to complete the interviews.

One-on-one interviews were conducted in-person (6 participants), through Skype (1) and e-mail (1). Each interview consisted of five extensive questions and were designed to take around thirty minutes to complete. Naturally, the length of each interview varied from 20 minutes to over an hour depending on the dynamic (formal/informal) and the time available to each participant. The imbalance in lengths does not skew the final results.

The four main objectives of the interviews were to determine 1) the current state of the education model at specific design institutions; 2) the use of an interdisciplinary approach and its implementation (specific examples); 3) links between creativity and interdisciplinary learning; and, 4) various methods for promoting creativity. First educators were asked to introduce themselves and explain whether they had taught in more than one institution. If so, they were asked to discuss if and how interdisciplinary teaching methods vary across schools. They were further asked if they personally implement an interdisciplinary approach into the classes they teach and provide examples of a recent in-class project that was successful. Secondly, educators were asked to express their opinions on the notion of a connection between creativity and an interdisciplinary approach. Finally, interviewees were encouraged to share specific examples of the methods and techniques for promoting creativity in design classes they teach. (Appendix 4.2 [A]).

4.2.2 Interview Demographics

The objective of this part of the research study was to collect diverse viewpoints from various institutions across Canada including small, medium, and large institutions. However, due to the geographical distribution of Canadian cities, the majority of schools that offer design are located in Eastern Canada. As a result, many educators from the East have overlapping experiences from more than one school. Additionally, three participants connected their experiences with school overseas. Eight interviewees discussed their experiences teaching in the following schools:

- George Brown College (Toronto, Ontario)
- Humber College (Toronto, Ontario)
- MacEwan University (Edmonton, Alberta)
- New Brunswick College of Art and Design (Fredericton, New Brunswick)
- Ontario College of Art and Design University (Toronto, Ontario)
- Ryerson University (Toronto, Ontario)
- St. Thomas University (Fredericton, New Brunswick)
- University of Alberta (Edmonton, Alberta)
- University of New Brunswick (Fredericton, New Brunswick)
- University of Toronto (Toronto, Ontario)
- York University–Sheridan College (Toronto, Ontario)

The international schools that were mentioned in the interviews:

- Academy of Eindhoven (Netherlands)
- The Hong Kong Polytechnic University (China)
- University of Western England (United Kingdom)

The majority of participating instructors came from higher-level institutions that offer three or four year design studies. This nuance is important as the interview analysis essentially excludes small-scale colleges.

The following sections present the main findings of the interviews (all interviews are referenced by number (1–8); for complete interview transcripts refer to *Appendix 4.2 [B]*). In *Part 1: Interdisciplinary Approach in Canadian Schools*, an interdisciplinary approach is discussed in general context, where interviewees share examples of collaborations and speak about the challenges. *Part 2: Creativity and an Interdisciplinary Approach* seeks to establish links between the use of an interdisciplinary approach and its influences on the creativity. The last section, *Part 3: Methods for Promoting Creativity* highlights and discusses the methods that educators use in their teaching practice. The interviewee names are excluded both for ethical reasons and also because anonymity helps focus on the richness of content rather than credentials.

4.2.3 Summary of the Interviews

Overall the interviewees felt positive, enthusiastic and open to interdisciplinary learning. Many expressed that while in school it is extremely important for students to work outside of their comfort zone, and to learn how to take on other people's ideas and methods. "Introducing an engineer into the mix, or a physicist, or a scientist, or a linguist or somebody who does not necessarily work within your discipline is a really good thing to do" (Interview 7).

There is merit to embracing one single discipline, but "in the [undergraduate] level, there should be many different areas that you should try to explore and many different teaching methodologies that you should explore." Students must be exposed to as many different methodologies and approaches as possible (Interview 6). However, the definition of interdisciplinary varies from educator to educator, so it is difficult to pinpoint a singular interdisciplinary methodology that works for everyone. For the majority of educators "interdisciplinary" is synonymous with "collaboration". Interdisciplinary projects "do not follow specific

rules, i.e. going by the Bible. Interdisciplinarity and multidisciplinarity do not mean to teach at the same time, but rather mean to be collaborative" (Interview 2).

Educators agree that interdisciplinary learning is crucial for the learning process, but professionals also need specialization to keep up with the modern design world. According to a design educator and professional from the design agency *Droog* in Amsterdam,

> "There is a big trend for not specializing and opening up boundaries, but I think at the end you must focus. I think we come from the era trying to break our boundaries, but at the end we will see the need to specialize, professionalize. Because you realize if you do not narrow it down and focus on something, you do not know anything." (Interview 1).

Many visual communication educators come from non-design backgrounds and therefore provide interdisciplinarity to their students. One of the interviewees did not observe the use of an interdisciplinary approach when she began teaching at George Brown College in Toronto. This college offers about eight design streams (as of 2012–13 school year) and grants both college diplomas and certificates. She began teaching *Materials and Technology* to young students despite her background in interior design and not graphic design. With her interior design perspective she taught students to perceive graphics and think about visual design communication problems in three-dimensions. She also brought her interdisciplinary vision to the architecture classes at the University of Toronto as an outside expert. The architectural students had mainly product-based projects to which she brought her knowledge of interior design, thus creating an interdisciplinary environment (Interview 1). Another design educator at the Ontario College of Art and Design University (OCADU) has his initial degree in English language and literature. Since his main specialty is Typography, the combination of his interest in linguistics and Typographical knowledge is striking. His students form a deeper understanding of typography and learn to see beyond fonts basics (Interview 4).

There were some educators who had not seen the implementation of interdisciplinary education. One of the educators at York–Sheridan does not believe in labeling and sees interdisciplinary teaching as a teaching "that happens naturally." "I see it in Asia and Europe, but I do not see it yet in Canada." (Interview 2). Another educator from OCADU supports that interdisciplinarity is important to design studies but he believes that interdisciplinary learning is just not happening. "I think to make it happen it would take a real effort and not just 'let's do some interdisciplinarity'. You have to say, 'This is the interdisciplinary program and here is why'." He also mentioned that there is more potential for interdisciplinary within university culture, while colleges are preoccupied teaching trade. Discussing colleges, he notes, "They recognize that the trade has changed, they recognize that things like the research and they use research methodologies in some classes in some colleges. But they tend to be fairly light. They tend to be instrumental like how to do web searches." (Interview 4).

A few educators expressed concern towards the existing Canadian-design-education's stand on cultural teaching. Design education needs to teach about different cultures and the global community. One of the examples an interviewee used is the *Droog Lab Initiative* in which she is directly involved. In *Droog*, the goal is to go outside of the world of design, stepping into the real

world. Designers learn from multicultural communities, including those in need. A key is to work together: graphic designers, product designers, and architects — all collaborating and seeking new solutions (Interview 1). Another design educator comments that it is important to learn other cultures first-hand, while traveling, "You need to learn to respect another culture. Respect is important." (Interview 2).

EXAMPLES OF INTERDISCIPLINARY COLLABORATIONS

In-Class Collaborations

Although some projects do not involve direct interaction with other disciplines, they still involve interdisciplinary skills such as photography, architectural drafting, painting, writing, etc. One of the interviewees shared examples conducted while teaching at George Brown College. One assignment involved observing communication in the city. Students had to create and annotate a photo-essay capturing communication in space within the city. Another project had students make a lighter out of material technology. Because George Brown does not have a workshop, students had to improvise, either working with friends and family or using simple technology. The students enjoyed the course because it brought many different perspectives and new approaches (Interview 1).

Some educators believe that the most successful projects happen when students go outside the design discipline. One educator from York University–Sheridan College shared a few examples where students had successfully crossed beyond the boundary of graphic design. In particular, package design projects from his students have won 55 international awards. Such success is partially a consequence of good instruction on culture and time management. He teaches architecture and fashion in his package design class. An example of a successful project by one of his students was designing a sustainable package. The initial aim was to have a good type and be bilingual, but it also had to be ecologically-friendly. She designed a rice bag that transforms into an apron. Consumers can use this product for many years to come (Interview 2).

Campus-Wide Collaborations

Researching on-campus issues and incorporating available resources is also a great way to engage students in an interdisciplinary project. For example, students at York–Sheridan are now being assigned to develop proposals focused on Sheridan College: extensive sustainability initiatives in all areas of college life, from resource and waste management to curriculum, communication and finance. Students are directly engaging faculty, administration, and technical staff who work in various areas at Sheridan College. This expands their notions of how design impacts and influences a broader sphere, and how design connects with other disciplines. Additionally, mid-way through one course, the instructor organizes a seminar session at York University with the faculty and graduate students in Education, Environmental Studies, Ecology and Design. Here students engage in discussions that explore the intersections between graphic design and other disciplines in relation to sustainability (Interview 5).

Because art-based disciplines like illustration, printmaking, and visual communications have many fundamental similarities, some colleges tend to overlap coursework across those disciplines. At the same time, they are all autonomous professional fields and therefore well-established institutions

treat them independently. One of the design instructors at OCADU collaborated with the illustration department. The illustration students produced a story for designers to work with. It is considered an innovative approach because there is a minimal cross-departmental collaboration in OCADU: it is all about expertise. "You would learn something. You would learn how illustrators work, and how designers work in one school" (Interview 4). A similar co-creative collaboration has been observed at MacEwan University. Illustration major students are partnered with students in the Bachelors of Communications and the Professional Writing programs. Each design student creates a book or magazine based on a story or poem produced by his or her partner (Interview 8).

Client-Based Collaborations

Interdisciplinary learning can also mean bringing real-world clients into the classroom. One example of a successful project comes from an educator at the University of New Brunswick who is also a professional architect. When the *Architect Association of New Brunswick*, in which the educator is a member, had their logo re-designed for their 75th anniversary, he decided to introduce this project to his students. Part of the assignment was that each student had to produce 10 proposals and present them to the Association and then the strongest logo would be further developed and even get paid for. Adding competition into the classroom and having a real client aboard gave students more enthusiasm to work on this identity problem (Interview 3).

Another successful example of bringing clients from outside took place at York–Sheridan. A lawyer presented an interesting problem to a media and web design class. Under the *Ontario Family Law Act*, persons who are going through the divorce process are allowed to defend themselves in court without the presence of a lawyer. However, there are certain confusing protocols and procedures that the divorcees need to follow. The instructor and his class took on a 57-page document and transformed the document into a way-finding problem. After organizing and mapping out the procedures under a number of steps and directions, the students designed a user-friendly interactive system. The success of the final product was due to students' careful briefing, analyzing and unfolding of the problem set (Interview 6).

Working from Within

One of the design educators believes that there is no need to wait for clients or collaborators to approach departments. Students should be capable of asking more complex questions based on their research and exploration that could lead to the projects becoming real. For example, in one of the upper level classes, a student was researching the assigned broad topic of "Migration and Immigration". She decided to focus on microorganisms that attach themselves to recreational boats and migrate to new locations where they become toxic and poisonous to fish and the surrounding environment. In order to raise awareness and make people responsible, she developed a proposal to the Canadian Government to become legislation. She approached an environmental problem with her design thinking and proposed a political solution (Interview 6).

External Projects

Some programs are unable to implement interdisciplinary learning into their courses but they offer students extracurricular collaboration. According

to an educator from OCADU, students had the opportunity to work on an interdisciplinary project with the *University Health Network*. At the time, a health study had determined that forms were being misread, leading to incorrect dosages of medicine given to people. Five design students volunteered to carefully examine existing forms and create a solution. Overall the project was successful and both parties benefited from the collaboration (Interview 4).

CHALLENGES

There are many challenges to educators who use an interdisciplinary approach. The main difficulties that were emphasized in the interviews are scheduling, planning, location, territoriality, lack of expertise, filtration, and prioritization.

Scheduling

An interdisciplinary approach that works with real clients also brings real deadlines to the classroom. Such projects teach students that they can loose opportunities if they are late. Because they cannot ask for any extensions, it can be challenging and stressful for students to adjust to such strict schedules (Interview 3). Semester-based programs are also unable to accommodate projects that are too large for one term. For example, one of the projects that took place in OCADU, but outside of the classroom, went from November until May. Students worked their own schedules out to complete the project (Interview 4).

Relative to the semester, interdisciplinary projects are very fast-paced for both teachers and students. For example, a course on sustainable design that one educator teaches at York–Sheridan is only 12 weeks long, "They have to analyze all the information and synthesize the analysis into design proposals and then represent concepts to a certain level of depth and detail to be convincing and viable." (Interview 5).

Planning

Depending on the program, most courses are carefully pre-designed and pre-planned prior to launching. Introducing an interdisciplinary project into a specific class could bring unforeseeable experiences and complicate course objectives. "Course outlines are social contracts with your students" that teachers try to follow as closely as possible (Interview 6). One of the interviewees supports interdisciplinary learning but refuses to introduce it to his students at OCADU. He has specific things in mind that he wants his students to focus on and learn and is concerned that introducing an interdisciplinary element might add confusion. His thinking is based on his experience working interdisciplinarily. While the project worked for him, he observed his colleagues' frustration with the collaborators because "they never showed up. Never paid attention to [the students]. So the whole thing was a waste of time" (Interview 4).

Oftentimes an opportunity presents itself at the last minute after a course outline has already been planned and approved. Although some classes allow course outlines to be general, there is often pressure from institutions to be specific. As a result, some potential interdisciplinary projects are simply unable to be implemented. On the other hand, some courses have a more general outline and are capable of adapting to incorporate an outside

project. For example, at York–Sheridan there is a course called *People Architecture* that deals with methodology of designing a system and it generally fits a variety of problems (Interview 6).

Since using an interdisciplinary approach can present unforeseeable experiences, educators should be flexible with their course abstracts. Sometimes projects can unexpectedly turn in a new direction that does not correspond to the course's original outline. For instance, one of the design educators at York–Sheridan had a disagreeable experience halfway through a project when the collaborator suddenly changed the direction. At that time, design students were working on a multimedia project with a computer science major at Sheridan College. Instead of spending time on design research, investigation, and prototyping, the collaborator led participants towards a production mode that did not fit with the needs of the design course. "If your project is going into one direction, and your course is going into another direction, what do you do now?" As a result, the instructor chose to withdraw his students from the project (Interview 6.)

Interdisciplinary projects are typically more time-consuming. According to one of the educators from York–Sheridan, "interdisciplinary projects take more time and require a lot of coordination." As an instructor, she has to spend additional time performing additional duties to find resources and to connect her students with collaborators. However, "despite the additional effort on my part, I feel that the experience of working and talking with others outside of design enriches learning and is totally worth it." (Interview 5).

Location

Geographical location plays a crucial role in the pedagogical methods that institutions promote. Smaller cities and secluded towns generally have fewer professionals and limited exposure to fast-paced environments. According to an educator from New Brunswick, it is hard to bring outside experts to the classrooms because there are not many in town. Also, those educators who work in small community colleges mainly focus on teaching technology and do not have as much opportunity to expose students to real world issues (Interview 3). In excessively large cities people are dispersed and miss the feeling of community. At Sheridan and York in Toronto, students communicate and interact less because they reside all over the city and need to commute. Assigning group work to those students can be problematic and discouraging. However, schools that are located downtown including OCADU, Ryerson, and the University of Toronto tend to have a more "cohesive culture" because students end up bonding while living in the heart of the city (Interview 4).

Territoriality

According to an educator from OCADU the rigid boundaries between departments are unjustifiable. Even though it is an art school with departments in fine arts, illustration, interior design, visual communications, etc., design students are not allowed to use a press without taking courses in the Printmaking department first. This is an additional barrier for students and only a few dedicated students would put the extra effort required to pass through. Clearly this territoriality makes it difficult for interdisciplinary collaboration to happen (Interview 4).

This acute sense of territoriality and individualism is also found within design departments from various institutions. According to one of the educators at York–Sheridan, there should be more communication between educators of different courses because in the end students are victims of repetition and exhaustion from the weight of work. "This harming thing that is happening is that professors are not sharing what they are doing with other colleagues." If educators are having trouble collaborating within a program, the chances of interdisciplinary learning occurring are very low (Interview 6).

Lack of Expertise

One of the key elements of interdisciplinary learning is employing experts to explain complex issues that relate to a given project. The organizing educator should be well rounded, knowledgeable, and open-minded. If the educator lacks the expertise and is individualistic or territorial, then proper collaboration becomes challenging. An educator at Sheridan College proposed a multidisciplinary course while being an expert of only a few of the areas that course touched upon. Instead of seeking ideas and asking for help from other educators, the person chose to keep the course closed thereby eliminating the possibility for wider collaboration (Interview 6).

Filtration

Some design educators mentioned that while using an interdisciplinary approach can be beneficial to students, "the problem is that institutions should not be acting like design studios." It is hard to imagine the scenario where designers, especially newly graduated ones, are competing against students. Another issue is when clients try to exploit students' talent to get design work for free. Oftentimes people ask educators, "Do you have a student?", which could also mean, "Can work be done for free?" (Interview 6). "There is a really great growing opportunity for the students, but I find it is ethically questionable" (Interview 8). Faculty members or instructors must become mediators and carefully filter clients' proposals to collaborate ethically.

Prioritization

Another challenge that educators face when implementing an interdisciplinary approach is maintaining the relationship between the learning outcomes of the course and the needs of the client. In the example described in the *Client-Based Collaborations* section, the educator and his class were designing an interactive system for a lawyer. Initially the lawyer was against the possibility of interactive design because of a past observation of a disastrously costly online project. "No one is interested in putting an interactive system, meanwhile I have got this course called *Interactive Systems* I am introducing this to!" As a result, the instructor had to reconcile the learning outcomes with the client's needs (Interview 6). The main priority in a scholarly environment should always be focused on learning outcomes rather than the clients' specific needs.

"Creativity is putting things together in a new way." Creativity involves making unexpected connections. According to a design professional and educator from *Droog*, there is no clear evidence that an interdisciplinary approach promotes creativity. No matter if the projects are interdisciplinary, fictional or real, nor how broad or precise the question is, the projects should not change students' ability to create. Of course the exposure to different disciplines can give students unexpected insights and different perspectives that can influence in new ways. But "design is not narrow, design does not repeat itself. It needs to look at other things that going in the world beside itself. And its a big problem in the world of design. It is very circular." (Interview 1).

An interdisciplinary approach usually employs an element of unpredictability. This happens when a project does not present specific restrictions and allows experimentation to thrive, "If you do not have many constrains, you might be doing 'gross creativity' and not a 'fine creativity', but it is still creativity." It is considered creative, if students are "going all over the place", but it might be challenging for those students who are striving to arrive to a specific solution. Depending on the nature of a project, this bipolarity could either be beneficial or harmful to a final outcome (Interview 4). An educator from York–Sheridan believes that "sometimes more limitations can stimulate creativity." If design students are faced with a blank slate and unlimited potential parameters, they may have trouble getting started. Students usually find it helpful to have criteria that provide some framework or indication of possible activation points (Interview 5).

An interdisciplinary approach does not need to be rigidly prearranged in order for creativity flow to happen in class. There is no need to wait for collaborations to take place; instead, students can work from within by implementing their existing knowledge on a project that can develop an interdisciplinary outcome. "I do not think you have to have initially work from outside. 'Coming in' can get the same results. You can turn it in on itself by understanding the problem set first." Students can first tackle a problem from an individual point of view and eventually develop a more holistic approach by involving other disciplines either in the final stage or even after completion of the design (Interview 6).

The essential question on whether the use of an interdisciplinary approach in design classes promotes more creativity received mixes responses. While many believe that an interdisciplinary approach can encourage creativity, some believe that creativity is influenced by things that are beyond preset pedagogical methodologies. "Creativity depends on the individual, like food preferences." (Interview 2). "No matter what, if it is within a fictional or real problem, you can do it in a better or worse way." This educator supports the viewpoint that interdisciplinary learning offers a "different way of thinking", but it does not mean it involves more creativity. Interdisciplinarity brings more unexpected results (Interview 1). Another educator also thinks that creativity, while using an interdisciplinary method, largely depends on students' academic level. Students in the first or second year usually work on more constrained projects, which help them to learn essential techniques and skills. However, students in upper years are usually given more open projects that further develop independent interests. Students could all be equally creative within constrained or open projects (Interview 7).

Design educators were asked to share the methods or techniques they use to foster creativity. As the diversity of responses range from conventional to experimental techniques, the selected answers presented here focus on methods that were most discussed in all interviews (for other methods refer to *Research Analysis and Discussion of Results (5.0)* section).

BASIC TECHNOLOGY

Creativity does not necessarily depend on technology, but having access to and knowing how to use technology can improve the quality of work. For instance, according to an educator from York–Sheridan, "Software helps to produce good projects, but cannot turn them into miracle." (Interview 2). Sometimes using technology on the basic level can help students come up with creative solutions. Using digital photography to document, create a photo-essay, or present complicated concepts visually is one of the most common tools design educators use in their pedagogy. For example, an educator from OCADU asks his students to document various typeface classifications such as transitional, classic, script, modern, etc. in their everyday life through photography (Interview 4).

MOTIVATION and CONFIDENCE

Creativity depends on the instructor's ability to motivate, especially when reaching weaker students. And giving students confidence is a key to helping them successfully learn any discipline. To do so, an educator from York–Sheridan tries to make sure that each student is comfortable and motivated. While preparing for his classes, he asks himself, "Do I use a workshop or book? If I use [the] book, is it open or closed? But I teach them to forget about the classroom; it is all the same." Creativity in the classroom may take place only after students immerse themselves fully into the learning process (Interview 2). His colleague from the same design program also observed that students develop their confidence and become more comfortable throughout their studies to the point where they can self-generate content and concepts. "That is not 100% true of all students but it is a general trend I have observed. I feel confidence in design skills helps students take more risks conceptually." It is the teacher's responsibility to manage the low confidence students have in their knowledge and skills early in their education, and to assist them if they hit a barrier in their design process (Interview 5).

RESEARCH

"We need to prepare course outlines that embrace all aspects of creative thinking, research, and exploration." Teaching students how to conduct research is an essential part of any design project (Interview 2). Incorporating exercises like proposal writing or establishing project objectives also helps students "analyze all the information and synthesize the analysis into design proposals and then represent concepts to a certain level of depth and detail to be convincing and viable" (Interview 5).

OUTSIDE EXPERTISE

To promote creativity and new ideas, design educators must bring other experts into the projects even if they only prepare small lectures or

participate in critiques. For example, an educator at the University of New Brunswick notes that one of the projects he assigns involves digital photography. Although, he understands photography and knows the techniques, he is not an expert. Thus, he brings a professional photographer to class critiques. After interacting with the professional, students get new ideas and inspiration. Students also develop deeper respect for Photography as a field (Interview 3). However, another educator from York–Sheridan is skeptical about inviting guest lecturers to classes. Based on his observation, the average student "falls asleep or turns their *YouTube channel* on" instead of paying attention (Interview 6).

GROUP WORK

One of the educators at OCADU, who specializes in courses on collaborative work such as *Creative Collaboration* and *Collaborative Research Creation Methods*, emphasizes the importance of collaborative work not just in specialty courses, but also in most design courses. She usually organizes students into large groups for bigger-scale projects, and two-people groups for smaller exercises or projects. She believes that this allows students to share their unique expertise with other students; thus leading to creative outcomes (Interview 7). However, there are many challenges with group work. One of the issues is that students are unable to meet, co-work, or collaborate for many reasons. "I was teaching this big research methodology classes and the first semester, I assigned groups. And they all hated each other. They all hated me" claims another educator at the same institution (Interview 4). An additional problem with group work is that students tend to attach to their existing knowledge or skill set. In other words, if a student is good with programming languages, he or she ends up coding. At the end, this student does not learn anything new. "How is that pushing you out of boundary of creativity? How is that taking you out of your comfort zone?" (Interview 6). One of the solutions to this issue is further described under *"Speed Dating"* in *Research Analysis and Discussion of Results (5.0)* section.

DOCUMENTATION

Documenting process or final work is another successful method to keep students involved and interested in project development. Documentation could involve a process work document, sketchbook or a blog, depending on the nature of the class. Documenting process helps students to re-evaluate old ideas and perhaps transform them into new fresh ideas (Interview 6). "You can get a designer's blog just like writer's blog, and the process is a really important part of it." (Interview 8).

4.2.4 Conclusion

The interviews were a valuable addition to the overall research. Although the majority of interviewees agree that an interdisciplinary approach is important to developing creativity in the undergraduate studies, many participants have expressed their doubts and concerns about any direct connections between interdisciplinary learning and creativity. A balance of positive, neutral and negative insights along with examples of teaching methods and techniques helped to develop testing procedures described in *Testing Results (4.3)* section.

4.3 TESTING RESULTS

The testing procedure consisted of three projects undertaken with students: *300,000+ Project: How Does it Work? EcoCar Sustainable Vehicle (Testing A)*, *Caring Project: How Does It Work? SAGE Logo Design (Testing B)*, and *Dare to Share Project (Testing C)*. *Testing A* was a first investigatory step in the process, where design students were presented with an opportunity to collaborate with another discipline at the University of Alberta. It was a controlled experiment that helped to establish the foundation for the following trials. The observations from *Testing A* promoted informed organization for *Testing B*, which involved a collaborator from outside of the University. *Testing C* was the last step in the entire process, and involved the campus community. It was designed to summarize all the previous findings and to further develop a clearer picture on the use of interdisciplinary practices in the design classroom.

The students who participated in all testing procedures were enrolled in various sections of a *Design Fundamentals* course. *Design Fundamentals* is a first-year introductory course to two and three-dimensional principles of design. Although most survey and interview participants have indicated that fostering creativity and incorporating interdisciplinary approach are essential to the learning process, most of the educators do not engage students in the experiential learning until the upper years. "With students in the upper years, the design projects that I give them are more and more open because I really want them to work towards their strengths [and] towards their thesis projects." (Interview 7). However, fostering creativity through an interdisciplinary approach could be more effective, when introduced earlier. For instance, Edward de Bono believes that after students spend time within educational systems, they "learn the 'game' that is required: how to please the teacher." (De Bono 1993, 31-32). The creative students are usually those who rebel against the system (De Bono 1993, 32). Thus, students in the first year are less familiar with the system and are more likely to make mistakes, which could be unconventional and creative. Also, through exposure to various disciplines or clients, students develop range of interests early in their education path. Although, those students might not be able to deliver as high-quality content to real-world clients, they are very creative and full of ideas.

[NOTE: The researcher was not part of the assessment process for any of three testing procedures.]

4.3.1 TESTING A 300,000+ Project: How Does it Work? EcoCar Sustainable Vehicle

4.3.1.1 Testing A Description

Testing A, 300,000+ Project: How Does it Work? EcoCar Sustainable Vehicle was the first step in this research study to investigate how an interdisciplinary approach can be implemented into a design classroom and how it could encourage students to be more creative, while tackling an assigned problem. *Testing A* was designed to test interdisciplinary collaboration between two disciplines within the University of Alberta. It involved two collaborators from the *Faculty of Engineering* who worked with student participants. Collaborators were asked to prepare and deliver a project brief that introduces a design problem from an engineering perspective. The anticipated goal was to encourage design discipline participants to think outside of their comfort zone, and potentially come up with creative response to the brief.

In order to gain a wider perspective on the effectiveness of the interdisciplinary project, as well as to allow for any additional feedback and suggestions, participants were contrasting two projects. They compared *Testing A* to a project that was assigned to them in *Design Fundamentals* as part of their course requirement, *Project 6: Imagery and Page Layout*, which primarily deals with grid and organizational systems. All participant impressions were collected through a short questionnaire. Consequently, the questionnaire quantified the effectiveness of the proposed interdisciplinary method, as well as indicated a level of students' creativity and enthusiasm based on their feedback.

All *Design Fundamentals* students at the University of Alberta were invited to participate in the workshops for *Testing A* through the advertisement posters. (Appendix 4.3 [A]). Posters were placed in the *Design Fundamentals* studio area to recruit as many students as possible. However, to ensure and secure a minimum number of participants for *Testing A* to take place, the focus was on one specific section as the teacher and teaching assistant of that class agreed for their students to participate. (Appendix 4.3 [B]).

4.3.1.2 Testing A Demographics

This testing consisted of two workshops: introductory presentations and a follow-up session. In the introductory session, all students present in class were involved. However, towards the second session, there was a decline and only eight student participants contributed their work and officially participated in the workshop. As a result, only feedback, work and impressions of the eight student participants are presented here. A short questionnaire was given to students at the end of the second session, with only six students completing it.

4.3.1.3 Testing A Project

Students in the *Faculty of Engineering* at the University of Alberta have a volunteer hands-on opportunity to run a collaborative student-managed project, where they build an ecologically friendly vehicle from scratch. According to the *EcoCar* group,

> "Our team hopes to promote environmental sustainability, innovation, and collaboration between local industry and academia. In doing so, the *EcoCar* Team offers students of various disciplines the opportunity to complement their studies with practical experience and get involved within their communities. Our zero emission vehicles are designed and fabricated in-house to compete in international competitions where they will be judged on their efficiency, design and practicality in the modern transportation industry. The *EcoCar Team* actively promotes science, engineering, and environmental awareness in Alberta through its community outreach initiatives." (Ualberta-EcoCar.ca).

Although the *EcoCar Team* has a well-established management hierarchy with a clear distribution of roles such as Project Manager, Electrical Engineering Lead, Mechanical Engineering Lead, Business Lead, and others, the team still lacks a design group that could be responsible for its identity and all of its visual components. As a result in 2010, the *EcoCar* approached the Department of Art and Design at the University of Alberta asking to collaborate. A visual identity was created by graduate students, enabling the *EcoCar* group to approach potential sponsors, recruit people in a more efficient manner, and publicly advertise their initiative. An already completed brief for *Testing A*, allowed for a better control, and excluded any external pressure such as having real deadlines.

The Project Manager as well as a business team member of the *EcoCar* initiative were asked to present the design brief to the participants and guide them through the process (for collaborators' presentation refer to *Appendix 4.3 [C]*). Students then were asked to brainstorm possible logotype solutions over the course of one week that could eventually develop into a full-rounded brand. Although the branding was already predetermined, this collaboration allowed students to learn more about the *EcoCar* project and volunteering opportunities.

4.3.1.4 Testing A Summary

According to the *Summary of the Interviews (4.2.3)*, collaborations are classified either as:

- *in-class*;
- *campus-wide*;
- *client-based*;
- *working from within*; and
- *external projects*.

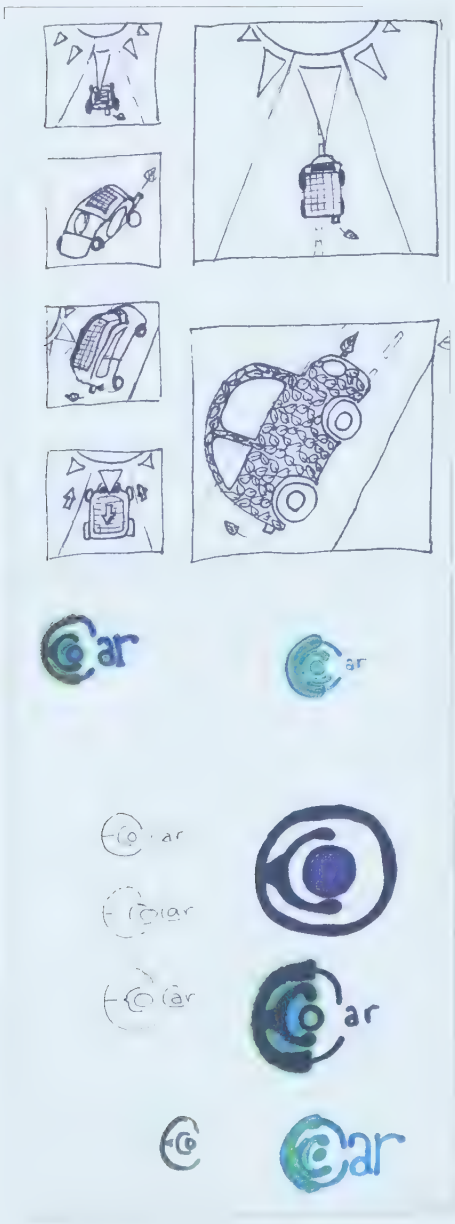
However, *300,000+ Project: How Does It Work? EcoCar Sustainable Vehicle* is a combination of a *campus-wide* and *client-based* interdisciplinary collaboration. The project was based on campus, involving collaborators from the *Faculty of Engineering*, who were also seen as clients who required a specific project result.

For the majority of students it was the first time working *campus-wide*, with a real client, collaborating with another discipline, and collaborating with their peers. Based on brief in-class discussions and conversations with the student participants, they all come from various disciplines not necessarily related to design. As a result, they draw on interdisciplinary thinking from their "home" disciplines. Regardless of the diversity of backgrounds, students admitted

that they previously did not have an opportunity to be part of *campus-wide* collaborations or collaborate with another discipline such as *Engineering*. But the most interesting aspect is that students who take *Design Fundamentals* rarely collaborate as groups except for mandatory critiques at the end of each course project. Based on these observations, it was interesting to witness how excited, yet careful students were working on the assigned problem.

The main techniques that were used in *Testing A* to engage students and promote the creative flow of ideas came from the design educators who have participated in the survey and/or interviews (*Survey Results (4.1)* and *Summary of the Interviews (4.2)*). The main techniques were:

Figure 4.3 a - Sketching



Real Project
Students were introduced to a real problem that they had to tackle.

Presentations
Collaborators and student participants all had to present at one point. Collaborators have formally presented a problem, while students had to publicly present their solutions.

Research
Although research was gathered and presented to students in the initial session, participants were encouraged to conduct quick research on possible solutions and similar existing projects.

Sketching
Students were asked to use the technique of a quick sketching as opposed to elaborating on mock-ups (Figure 4.3 a; for other visuals refer to *Appendix 4.3 [E]*).

Brainstorming
Students were involved in the process of brainstorming as a group and were also asked to brainstorm at home (Figure 4.3 b).

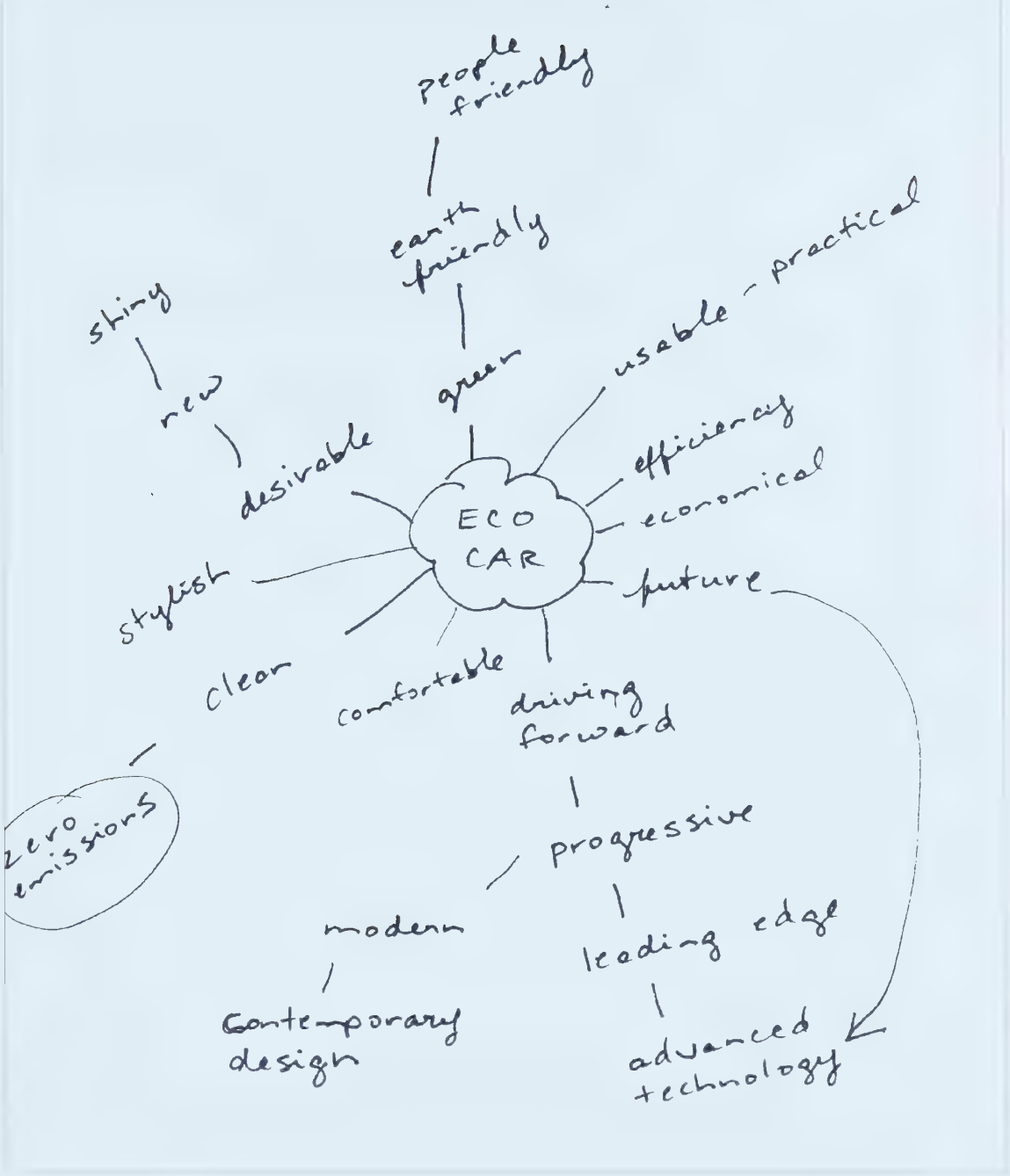
External Feedback
Collaborators who provided feedback came from two different backgrounds — engineering and business studies.

Internal Feedback
Students have also received feedback from their instructor.

Group Critique
Students were asked to put their work down and collaborators, researcher, as well as their peers provided feedback.

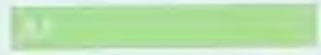
Maintaining the Momentum
Instead of creating a well-rounded final solution, the goal was to get students to think quickly and encourage them to take risks and to be "messy".

Figure 4.3 b - Brainstorming



At the end of this *Testing A, 300,000+ Project: How Does it Work? EcoCar Sustainable Vehicle* students were given a brief questionnaire where they could share their opinions and provide general feedback on using a real project versus an in-class project. The gradation questions ranged from "no" being 1, "maybe" as 3, and 5 as "yes" (Table 4.3 c). On average, students felt the strongest towards learning from/about other disciplines as being beneficial to their education and self-growth (4.8). Students felt equally strong about a real project brief making them more dedicated to the project (4.3) and that *Design Fundamentals* or any other design class could be more interesting if one of the projects had a real project brief (4.3). Student felt less strong about a real project bringing a higher likelihood of unexpected results in comparison to *Project 6* they were assigned in class (3.5). Students on average felt undecided towards a real project giving them more freedom to be creative than *Project 6* (3.0, i.e. solid "maybe"). Five students also commented that real projects would help them gain experience dealing with clients, give more experience in real-life scenarios, allowing their ideas to be publicly displayed, practicing for the real world, and one person said that it would make them more creative. Only two students could think of possible issues with this type of learning such as time management and adding distraction to school. (For a full list of answers refer to *Appendix 4.3 [D]).*

Table 4.3 c - Student Questionnaire Results

Questions:	Ranking: 0 1 2 3 4 5
1. A real project brief makes me more dedicated to the project.	
2. Learning from/about other disciplines is beneficial to my education and self-growth.	
3. I feel that I have more freedom to be creative in a real project than with *Project 6*.	
4. *Design Fundamentals* (or any design class) can be more interesting if one of the projects had a real project brief.	
5. I feel like a real project has a higher likelihood of bringing unexpected results in comparison to *Project 6*.	
6. List any possible benefits to this type of learning.	"Would help to gain experience dealing with clients." "Promotes professionalism. Real-life scenarios experienced." "This type of learning is beneficial because creating a logo for a real project brings out more creativity in me, because I feel like my ideas could be incorporated into a large scale projects that the public will see." "More creative." "Practice for the real world!"
7. List any possible issues with this type of learning.	"None that I can think of." "No issues that I can think of." "Time managing."

Overall, testing went as planned and students were on average enthusiastic and involved throughout the project. A main consideration is that this project was not part of the curriculum, meaning that students did not have to participate. Students could equally be discouraged or encouraged if their work will be formally assessed for a grade. By reflecting back on students' behavior, feedback, participation, and results, the final recommendations are:

Quick Project vs. Prolonged Project

One of the primary reasons why students showed their enthusiasm was the duration of the project. Students right from the beginning knew what was expected of them and how to manage time. Giving students timelines and/or guidelines is also essential to successful outcomes.

Collaborator's Presence

The collaborator's presence made students more engaged and responsible. Making sure that the collaborator could attend as many sessions as possible made this experience more real and beneficial to learning.

Process Work vs. Final Outcome

Allowing students to engage in the process rather than focusing solely on the final outcome could be more liberating. Students possibly feel less pressure and better develop the understanding that process is crucial to designing. However, this approach would not work for those projects that must deliver final outcomes at the end.

Comfort Zone

Pushing students out of their comfort zone was one of the main perks of using an interdisciplinary project. Regardless of the interdisciplinary problem or collaboration, students will always be pushed out of their comfort zone with his type of learning. In this particular experience, aside from campus-wide collaboration, students were also learning to collaborate as a large group for the first time.

4.3.2 TESTING B / Caring Project: How Does It Work? SAGE Logo Design

4.3.2.1 Testing B Description

Testing B, Caring Project: How Does It Work? SAGE Logo Design is the second step of this research study that seeks to discover connections between interdisciplinarity and creativity in design classrooms. It was deigned after *Testing A, 300,000+ Project: How Does It Work? EcoCar Sustainable Vehicle* was conducted, thus allowing for a more controlled research inquiry to occur. *Testing B* had flexibility to address issues that arose in the first testing, such as time management, encouragement, and group dynamics, but at the same time anticipated the possibility of unexpected outcomes.

While *Testing A* was dealing with *campus-wide* and *client-based* learning, this particular testing involved an outside collaborator from the *Seniors Association of Greater Edmonton (SAGE)*. This project was strictly a *client-based* learning experience for students. The collaborator was asked to prepare and deliver a project brief, to introduce the problem to the students, and to participate in providing both on-going and final feedback. The goal was to encourage students to go through new learning experiences while delivering final solutions to the client. As in *Testing A*, participants were given a short questionnaire to share their feedback at the end of the project.

All *Design Fundamentals* students at the University of Alberta were invited to participate in the workshops for *Testing B* through advertisement posters that were posted in various design studio spaces on campus. (Appendix 4.3 [A]). Similarly to *Testing A*, to ensure a minimum number of participants, the focus was on two groups of students enrolled in *Design Fundamentals [NOTE: these two groups were not the same students as in Testing A].*

4.3.2.2 Testing B Demographics

All student participants in this study came from the University of Alberta. However, in this testing there were two groups of participants. Both groups were enrolled in separate sections of a *Design Fundamentals* course. Also involving two groups presented an element of competition that was absent in *Testing A*. The final results presented here are combined because there is no practical necessity for groups to be singled out.

Like *Testing A*, this particular investigation consisted of two workshops: an introductory presentation and a final meeting. In the introductory session, all students present in both classes were involved, but towards the end of the project, there were only nine participants. All participation was voluntary. Although this testing involved slightly more students than *Testing B*, the participation rate was much lower given that there were two course sections involved. Hence, the questionnaire results presented here reflect answers from nine participants.

4.3.2.3 Testing B Project

The *Seniors Association of Greater Edmonton* is a full service not-for-profit organization that aims to build and maintain a broad range of programs and

services that enhance the quality of life for seniors and their families. "With over 40 years of experience, *SAGE* is regarded as a major provider of innovative seniors' services in the capital region. There are a variety of unique and age-specific services available by telephone, e-mail or in person." (MySAGE.ca). *SAGE* supports a number of services such as *Guardianship*, *Health Services*, *Home Services*, *Housing Services*, and other *Member Services* such as administrating courses, activities, special events, and common interest groups that meet on a weekly basis.

At the beginning of 2012 *SAGE* began to develop the *Emerging Social Media Program* to alleviate the sense of isolation amongst seniors by teaching them social networking. The purpose of these social networking tools is to help seniors get in touch with their tech-savvy children and grandchildren, discover lost connections, or connect with people with similar interests. *SAGE* has designed and implemented a number of introductory classes that focused on the use of *Twitter*, *Facebook*, and *Gmail*. Since the first sessions were exceptionally successful, *SAGE* intended to further develop and improve this program. A proper logo design with the future prospect of an entire identity design had to be developed so that the program could be professionally advertised to the general public, government, and private funding groups.

The Project Assistant of the *Emerging Social Media Program* at *SAGE* independently presented the project brief to both groups of students. (Appendix 4.3 [H]). The collaborator was also asked to introduce general issues that local seniors are facing and to talk about the resources and solutions that the city of Edmonton and province of Alberta provide. The main challenge was to encourage students to do thorough research and develop a wider scope of the understanding before jumping into the design process. (Appendix 4.3 [I]).

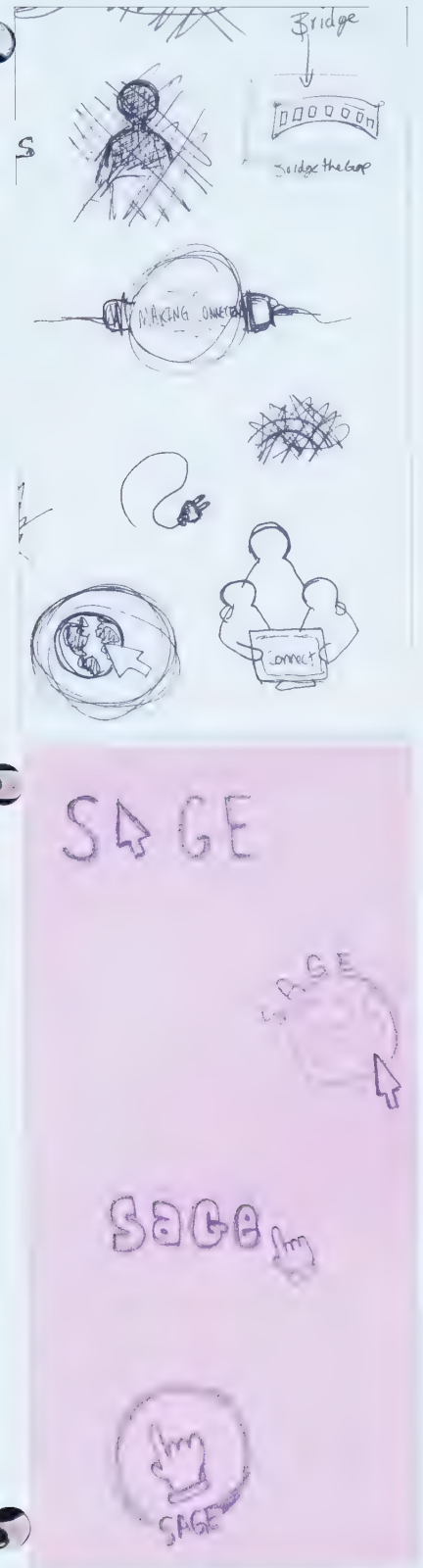
4.3.2.4 Testing B Summary

Unlike the previous testing, which was primarily based on campus, *Testing B* involved an external collaborator. Although this collaboration was ethically appropriate because the *Emerging Social Media Program* at *SAGE* is not-for-profit and its success depends on voluntary participation, it was a concern for students to work with real deadlines and to communicate with a real client. According to class discussions, this was the first time each student had worked with a real client and dealt with real-world issues.

The primary aim of *Testing B* was to connect aspiring design professionals with a client in order to provide all participants with new learning and professional opportunities. While the participants in *Testing A* were learning collaborative practices, *Testing B* promoted independent work on a competitive basis. This different approach helped to develop a better understanding of how students perform under various conditions.

This particular collaboration consisted of two sessions. In the initial session, the collaborator presented an introduction to *SAGE*, explaining the organization's beliefs and values, introducing general topics of gerontology, and covering main concerns such as a rapidly aging population in Canada. Students were also introduced to a basic branding and identity design, including the topic of

Figure 4.3 d - Sketching



representation of elderly in the media. Both presentations were dynamic and engaging and raised the general curiosity of the students. The second session was designed to summarize the study and to collect the final work for the collaborator to review. After this session the collaborator was asked to send electronic feedback to each student and to pick the most suitable proposal for further development. It should be emphasized that it was the collaborator's responsibility to further develop the chosen design beyond completion of *Testing B*.

While the core focus of *Testing A* was to guide students through the development of a logo and teach them how the typical identity design process works, *Testing B* encouraged students to go through the process independently. Since most of the work was extracurricular, students did not go through the process of in-class collaboration.

Based on the methods described in *Survey Results (4.1)* and *Summary of the Interviews (4.2)* sections, the main techniques used to promote creativity in the *Caring Project: How Does It Work? SAGE Logo Design* interdisciplinary collaboration were:

Real Project
Students were introduced to a real problem for the elderly population. The collaborator was asked to introduce *SAGE* and talk to participants about gerontology and cover statistical facts related to seniors in Canada.

Presentations
Both the collaborator and the researcher presented the project to students. However, unlike in *Testings A* and *C* (addressed later), this testing did not allow for student presentations.

Timeline
This project had a very tight timeline that made students work fast and efficiently.

Research
Unlike in previous testing, where the collaborator did not present any in-depth research, *Testing B* presentations covered significant issues concerning the elderly population. In other words, a large portion of research was completed for the students. However, students were still encouraged to conduct further their own independent research.

Design Thinking
Students had to involve themselves in the design thinking process and to better understand the issues in-depth.

Sketching
Students were asked to sketch as many ideas as possible in class and at home instead of refining one final design. (Figure 4.3 d; for other visuals refer to *Appendix 4.3 [K]*).

External Feedback

The collaborator who provided feedback to students came from a background unrelated to design *[NOTE: area of study not disclosed]*.

Individual Feedback

Individual feedback can be extremely beneficial. At the end of this project, the collaborator was asked to provide feedback and she chose to talk about each proposal individually. While this approach can help develop a more inclusive learning environment, there is a risk that some students may take comments personally. (Appendix 4.3 [M]).

Maintaining the Momentum

Instead of creating a final solution, students were asked to focus on rough ideas. Students were encouraged to experiment and sketch in a free manner.

Involving Humor

Involving humor during the initial presentations helped students get involved in the project. Catering language, imagery and general interaction to the target audience is essential to raise the participation rate.

Communication with Collaborator

There was a lot of electronic correspondence with the collaborator. Unfortunately, the collaborator's inability to answer questions in a timely manner led to less fruitful results.

Increasing Competition

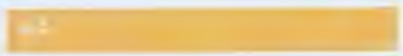
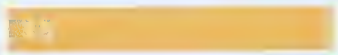
Increasing competition was a key aspect that kept students engaged throughout the process. Involving two or more sections adds more adrenaline to the overall competition.

Reward

In order to maintain participants' interest and commitment to the project, they were assured that the winning design would be developed into a real project.

At the end of *Caring Project: How Does It Work? SAGE Logo Design* students were given the same questionnaire, as in *Testing A*. However, students were not comparing their experiences working with *SAGE* to any of the *Design Fundamentals* core projects. Overall, participants of *Testing B* were the least enthusiastic group to work on an interdisciplinary project from all three testing procedures conducted with other *Design Fundamentals* participants (Table 4.3 e). On average, students felt strongly that learning from/about other disciplines was beneficial to their education and self-growth (4.4). Students also felt quite strong about a real project brief making them more dedicated to the project (4.1). Participants of both groups felt somewhat strong that "*Design Fundamentals* (or any design class) can be more interesting if one of the projects had a real project brief" (3.8). Students felt slightly below neutral towards a real project bringing a higher likelihood of unexpected results in comparison to in-class projects (2.9). Students did not feel much freedom to be creative in *Caring Project*, which was the lowest average ranking amongst all testing activities carried out in this research study (2.3). (For a full list of responses refer to *Appendix 4.3 [J]*).

Table 4.3 e - Student Questionnaire Results

Questions:	Ranking: 0 1 2 3 4 5
1. A real project brief makes me more dedicated to the project.	
2. Learning from/about other disciplines is beneficial to my education and self-growth.	
3. I feel that I have more freedom to be creative in a real project.	
4. *Design Fundamentals* (or any design class) can be more interesting if one of the projects had a real project brief.	
5. I feel like a real project has a higher likelihood of bringing unexpected results.	
6. List any possible benefits to this type of learning.	"It would give students real experience in working with real problems." "Analysis and criticism from a larger audience." "Perhaps more practical." "Getting to know real clients looking for real solutions to problems. Practicing in the classroom has benefits, but I feel actual clients may present students with new or previously not considered limitations or desires." "Real-world experience, catering to an actual audience." "Application to real world and more considerate through process." "Real world learning."
7. List any possible issues with this type of learning.	"It adds more pressure or stress to the learning process if there is a real project." "You are restricted to available projects." "More stressful." "Clients may expect more than students can offer." "Criterion limitations." "Constrained time limit." "Could be difficult for non-designer minds, they can make bad work."

In general, *Testing B* did not go as well as planned mainly due to time constrains and tight deadlines. Since this project was extra-curricular, the timing had to be right to avoid students being overwhelmed or discouraged by the addition work. By reflecting back on students' behavior, feedback, and sketches, the final recommendations are:

Quick Project vs. Prolonged Project

One of the primary reasons why students felt overwhelmed was the time constrains of the project. This project was presented as a quick one, although it would have been more successful if students were given more time.

Collaborator's Presence

The collaborator was present at the initial session; however, the collaborator did not agree to have any work-in progress sessions, which resulted in student's inability to work independently. Also, the collaborator could not attend one of the final sessions, possibly resulting in participants' disbelief in the seriousness of the project.

Communication

The collaborator's inability to maintain proper communication added more pressure on students since some of their questions were answered in an untimely manner.

Process Work vs. Final Outcome

Although the focus of this testing was on the process, the collaborator was seeking a more finalized result. Initially, the collaborator was notified that students would be developing models and then a selected design could be developed into a final product. However, the collaborator's poor knowledge and impatience towards the design process led to general misunderstandings.

Comfort Zone

Students were constantly pushed out of their comfort zone. However, it did not direct them towards innovation or creativity; instead, it led them to more uncertainty. In order for students to be more comfortable with experimental learning, they must be provided with a more guidance and support.

Feedback

The collaborator's final electronic feedback was more personal than critical, which was of less benefit to the students. Since the researcher was a mediator between the collaborator and the students, it was debatable whether to filter feedback or provide a complete version.

Collaborator's Commitment

Aside from being present during sessions, the collaborator must also be able to commit to further development of the project past the workshops. However, the collaborator failed to notify the researcher of the final stage of the logo development for *SAGE* program.

4.3.3 TESTING C / Dare to Share Project

4.3.3.1 Testing C Description

Testing C, Dare to Share Project was the last step in this research study that investigated how an interdisciplinary approach can be implemented into a design classroom. The purpose of *Testing C* was to validate the information collected from *Testing A* and *Testing B*. It was designed to reflect on the previous tests by prognosticating controlled results, but also including the possibility of unexpected outcomes. This testing involved two collaborators from the *University of Alberta Campus Food Bank* who worked with yet another group of student in a *Design Fundamentals* class at the University of Alberta. The collaborators were asked to prepare and deliver a project brief outlining specific needs. The main goal, similar to previous procedures, was to encourage design students to think outside of their comfort zone and to deliver final design solutions to the client.

In order to determine the effectiveness of the *Dare to Share* interdisciplinary project as compared with the studio-based course projects, and to collect additional feedback and suggestions, participants contrasted the project with those that were assigned to them in *Design Fundamentals*. As in *Testing A* and *B*, participants were given a questionnaire that identified the effectiveness of the interdisciplinary experiment.

All *Design Fundamentals* students at the University of Alberta were invited to participate in the workshops for *Testing C* through advertisement posters that were distributed around studios to recruit as many design undergraduates as possible. (Appendix 4.3 [A]). However, to secure a minimum number of participants for *Testing C*, a specific *Design Fundamentals* section was involved with the instructor's approval.

4.3.3.2 Testing C Demographics

This testing consisted of four sessions: introductory presentations, two work in-progress sessions, and a final meeting. During the introductory session, the entire course section was involved with two external students who attended after seeing the advertising posters. Yet towards the second session, those additional students declined any further participation. However, all students in the fundamentals section maintained full participation throughout the entire venture. As a result, 14 students participated in various activities, submitted final work, and completed the questionnaire.

4.3.3.3 Testing C Project

Campus Food Bank exists to ensure that the University of Alberta community has access to healthy food as a right and not a privilege. The food bank serves those in need with short-term food relief. It provides services to those students who would otherwise go hungry due to unexpected circumstances beyond their control.

> "Founded in 1991, *Campus Food Bank* is a registered charity that distributes food items and toiletries to all members of the University of Alberta community: students, staff, alumni and their children. Because of this community's remarkable generosity, we were able to distribute enough food to feed over 2500 individuals [in 2011]. Proper nutrition shouldn't be a

luxury item. We exist to ensure that the campus communities have access to healthy food as a right, not a privilege — one must eat well in order to learn well. If you are in need, please do not hesitate to use our confidential services." (CampusFoodBank.com).

Many students, staff and other university community members at the University of Alberta remain unaware of *Campus Food Bank* services. In order to raise awareness amongst university members as well as the general public and to promote existing and to attract future sponsors, *Campus Food Bank* creates advertising campaigns on an annual basis. In this instance, the food bank social group decided to target a very specific audience — international students. Since the idea of a "food bank" was conceived in western society, the international demographic oftentimes does not come across this concept in their native countries (The Global Foodbanking Network). As a result, *Campus Food Bank* was seeking a campaign that could be translated into multiple languages and reach people of diverse cultures. The main challenge was to deliver the cross-cultural message while targeting a local demographic. The main languages that *Campus Food Bank* anticipated to implement were: English, French, German, Spanish, Farsi, Mandarin, Cantonese, Arabic, Korean, and Urdu. (Appendix 4.3 [O]).

Two executive members of *Campus Food Bank* presented the design problem to the group of students and moderated them throughout the creative process of this advertising campaign. They attended two sessions: the introductory and the work in-progress one. Students were also given a strict schedule and specific guidelines to complete the project. Since collaborators from *Campus Food Bank* had agreed to implement advertising posters into their annual awareness campaign, the deadlines became real. As a result, *Dare to Share Project* was strictly structured. (Appendix 4.3 [P]).

4.3.3.4 Testing C Summary

Dare to Share Project, similar to *300,000+ Project: How Does it Work? EcoCar Sustainable Vehicle* was a combination of *on-campus* or *client-based* interdisciplinary collaboration based on the classification determined in the *Summary of the Interviews (4.2.3)* section. While the project was situated on campus and involved collaborators who also study at the University of Alberta, these collaborators were also seen as clients since they needed a specific design product.

As *Design Fundamentals* is an introductory design course that primarily focuses on a hands-on approach without using computers, participants were not expected to work digitally. Students were asked to use media that they felt the most comfortable with, but were also encouraged to explore new tools. At the end, all the digitalizing — such as scanning, cleaning up, unifying design into one style, and applying logistic information such as *Campus Food Bank's* message, address, and contact information — was not a responsibility of a student. As a result, students were able to focus on their strengths as opposed to learning computer software, which could be a stressful process for a design novice.

Similar to the previous two testing procedures, the student participants came from various disciplines not necessarily related to design. Yet, only a few participants had similar collaboration experiences in their "home" disciplines. For the vast majority of participants this type of collaboration was a new

encounter. Unlike in *Testing A* and *B*, the students of this particular group had previously collaborated with each other as part of the teaching methods used by their instructor in class. In contrast to the two previous experiments, talking, interacting, and sharing ideas was more natural for this group.

As previously mentioned, this particular collaboration consisted of four in-class sessions. The first session was designed to cover background information and introduce *Campus Food Bank*. The collaborators delivered a brief presentation *[NOTE: they chose not to enclose their presentation in this research study]*. In order to encourage and inspire students to participate, an additional presentation on poster campaigns covering aspects of history, characteristics of successful campaigns, and providing modern examples of food-related posters was delivered. (Appendix 3.3 [Q]). All participants were genuinely engaged and interested in both presentations, which resulted in a hundred percent participation rate throughout the project. After the presentations, students were assigned to work on a specific language that they felt the most comfortable with. Those who were not comfortable with foreign languages were encouraged to work with English.

The second work-in progress session consisted of working on initial ideas. In order for this type of project to work, students had to agree on a single concept that could be further developed into a unified design campaign. Students were also given freedom to come up with their own voting process. Although some students were initially unhappy to further develop someone else's idea, they were strongly encouraged to make it as personalized as possible, allowing individual style, experimenting with different media and hand lettering, and choosing any imagery they wanted. Through this encouragement, students felt more involved. This type of situation also demonstrated a real-life scenario where a judgment for "the best" idea had to be made.

The third session involved more developed work in-progress that students had to present to *Campus Food Bank*. The collaborator who attended this session was required to provide thorough feedback so that students could proceed with a clearer direction. Overall, the collaborator was extremely impressed with the quality of work and dedication from students who were voluntarily participating in *Testing C*.

The last session involved a final critique, general feedback, and the collaborators' closing remarks. Students were encouraged to informally share their overall experiences of the project and were also asked to complete the questionnaire (Table 4.3 h).

Based on the design educators' techniques presented in the interview and survey analysis as well as observations from *Testing A* and *B*, to promote a creative flow of ideas in *Testing C* the following techniques were used:

Real Project
Students were introduced to a real problem that they had to understand, analyze and provide solutions to.

Presentations
The collaborators, research mediator and student participants all had to present at one point. The collaborators formally presented a problem and spoke on gerontology-related issues in the initial session. Since *Design*

Fundamentals students are unfamiliar with advanced design practices, a short presentation on poster design was delivered to explain basic concepts and provide inspiration. The students also publicly presented their solutions throughout three follow-up sessions.

Timelines, Objectives and Guidelines

Establishing clear timelines, objectives, and guidelines were crucial to the process of this project. Since it was an extra-curricular activity, choosing a time frame that was of benefit to the course was essential to avoid any overlap between the deadlines of the project and the course in order to help minimize pressure and stress. As for objectives, this activity significantly supplemented the coursework. Guidelines were also essential to direct those students who might have been dealing with this type of work for the first time. Since the majority of students were new to design, the researcher had to establish a well-organized route that would guide students from the beginning to the end.

Brainstorming

Students were involved in the process of brainstorming throughout the whole project. Participants were encouraged to shout out their solutions that sometimes led to unplanned group discussions.

Research

Although *Campus Food Bank* testimonials, the project goals, and the basics of Poster Design was presented to students, they were required to research further. Students were asked to read about issues such as poverty, starvation, and food deficit. Part of the research included contacting people about the translations.

Group Critiques

Students were asked to present their work on numerous occasions. Since this particular group was very responsive, group critiques were very beneficial to the process.

Design Thinking

Although the presence of design thinking was constant throughout, the most interesting example was when students had to create a procedure for selecting a general direction for the poster campaign. Students chose to go with the process of elimination where everyone had the right to vote.

Sketching

Students used sketching throughout the first two sessions. Since during the first introductory session students did not have enough material to work with (e.g. thorough research, reference to other poster campaigns), they were asked to create quick thumbnails of their initial ideas.

External Feedback

The collaborators who provided feedback came from design-unrelated backgrounds *[note: collaborators' backgrounds are not disclosed].*

Role-Playing

During one of the critiques students were given specific roles in order for the critique to have constructive criticism. Some students were Writers, responsible for a content and language used; Layout Artists were

ure 4.3 f - Visual Results

responsible for the organizational design; Researchers were in charge of background information; there were a few people in a higher rank positions such as Art Directors and Project Managers who oversaw the project. However, this role-playing exercise was over-simplified since students were introduced to a typical design studio hierarchy for the first time.

Co-Designing with Students

Part of the reason this project was successful was the fact that the researcher/mediator helped students to transfer their work into a digital format once the exercise was complete. Although one does not want to run into the risk of doing work for students, it is essential to establish that the instructor is willing to help fundamentals students with complicated tasks.

Maintaining the Momentum

Before working on a refined final solution, students were encouraged to take risks and experiment. It was crucial to maintain the momentum after one particular idea was selected and students felt discouraged.

Involving Humor

One of the main reasons this project was successful was by introducing humor to the work in-progress. Students, the collaborators, the course instructor, and the researcher had many good laughs throughout the project. Allowing students to be a little goofy and relaxed is a key to keeping their attention and involvement.

Communication with Collaborator

In this type of learning where new questions are raised by students, the teacher needs to ensure that the collaborators are in contact. For instance, at one point approximately six students were e-mailing the researcher and the instructor without taking the time to e-mail the collaborators directly. The researcher had to ensure that the collaborators were answering those questions appropriately.

Reducing Competition

Reducing competition in this particular project was of great benefit to the students. Instead of creating a competitive environment where students would be stressed about impressing the collaborators, it was decided to create a more cooperative environment. The researcher encouraged students to share ideas and cooperate, thus promoting group effort and fostering the ideas of sharing and interdependency. One may argue that competition is essential to successful outcomes in design, but it is not completely so.

Reward

In order to maintain students' interest and involvement there should be a reward at the end of the project. In curriculum-based projects, the rewards usually come in the form of a good grade. However, keeping students involved in extra-curricular activity is trickier. This project in particular had a few rewards. First, students were promised that all work would be used instead of selecting a few pieces on a competitive basis. Although, this approach might promote laziness and lack of motivation, the students were told that their work would be seen by thousands of by-passers and that it was their responsibility to make their work as presentable as possible. Second,

all students were given a printout of their poster that they could use for their portfolios, hang on the wall, or show off to friends. Third, each student's work was exhibited in a public space at the University (Figure 4.3 g). However, the showcasing does not need to be as elaborate as presented here. Sometimes students are content when their work is publicly displayed in a studio space. (Appendix 4.3 [V]).

Figure 4.3 g - Public Exhibit

At the end of *Testing C, Dare to Share Project students* were given the same questionnaire where they could provide their feedback on using a real project versus in-class project. The majority of answers reflected upon this particular project as opposed to including the overall possibility of general real projects being implemented into the curriculum (Table 4.3 h). Hence the information collected from this questionnaire targets a very specific project instead of widely extending towards the idea of interdisciplinary learning. On average, students felt the strongest that learning from/about other disciplines is beneficial to their education and self-growth (4.4). Students felt second strongest that they had more freedom to be creative in a real project as opposed to projects they had done for *Design Fundamentals* class (4.1). "I feel like a real project has a higher likelihood of bringing unexpected results in comparison to the projects assigned in this class" was ranked as the third highest answer (3.9). Participants felt less strong that design classes could be more interesting if one of the projects had a real project brief (3.8). Finally, students felt the lowest that a real project would make them more dedicated; however, while weak, they still felt that a correlation (3.7). (For a full list of answers refer to *Appendix 4.3 [S]*).

Although the objectives of this research study were introduced in an identical way as in *Testing A* and *B*, students of this particular group had been more open to creative ideas. They also appreciated the whole process more than the two previous groups. Some students said that "learning above and beyond" was "more interesting" in this process. Interesting feedback came from three students who mentioned that an interdisciplinary approach made them more creative or allowed for more creativity to happen in this particular project.

In general, testing went as planned and this student group was on average more enthusiastic and involved in *Testing C, Dare to Share Project* than the groups in the previous two projects. Although there are many individual/combination of various factors that could have contributed to the success of this project, such as the use of techniques described above and the nature of the particular problem, it is possible that the overall group dynamic was the main cause. Final recommendations were:

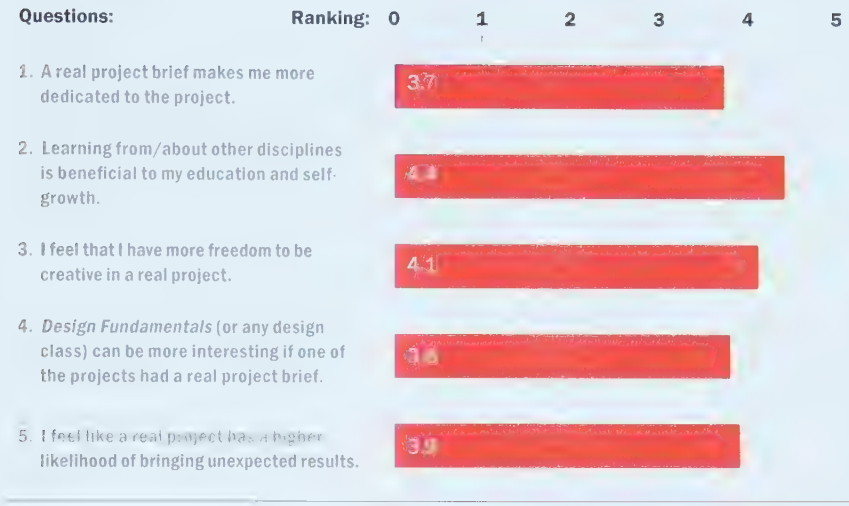
Quick Project vs. Prolonged Project

One of the primary reasons why students showed their enthusiasm is the duration of the project. From the beginning the students knew what was expected of them and how to manage their time. Giving students timelines and/or guidelines is also essential to successful outcomes.

Collaborator's Presence

The collaborators' presence and dedication made students more engaged and responsible. Both collaborators had coordinated their attendance so they could attend as many sessions as possible.

Figure 4.3 h – Student Questionnaire Results



6. List any possible benefits to this type of learning.	"It's for charity." "Deadlines are real. Creativity is appreciated 'Experience in dealing with a potential client. Process of a real project (interaction and roles) More real-life hands-on experience rather than just theory.' 'Allows for more creativity. Has real world applications Group brainstorming. Creative."
7. List any possible issues with this type of learning.	"The extra time it took away was stressful "Everyone must obey the same idea." Stressful. Time consuming." 'If it isn't graded, I feel less motivation to come up with a finished artwork, when trying to balance other courses with this

Process Work vs. Final Outcome

The focus of this testing was primarily on the final outcome. Students were constantly reminded to polish their work and encouraged to do their best since their designs would be publicly displayed.

Comfort Zone

Students were successfully pushed out of their comfort zone, thus allowing for more collaboration and exploration.

4.3.4 CONCLUSION

Testing A, *B*, and *C* were designed to explore a wide variety of types of interdisciplinary learning as possible, such as *in-class*, *campus-wide*, *client-based* and *external projects*. Each testing involved an element of unpredictability, thus allowing for more exploration to happen. Although it worked well in *Testing A* and *C*, unpredictable time constrains and semester workload affected *Testing B* in a less positive way. Given that all testing procedures were conducted on extra-curricular basis, the participation rate was stable and students were open and enthusiastic about their participation.

5.0 RESEARCH ANALYSIS and DISCUSSION OF RESULTS

5.1 INTRODUCTION

This section defines the current state of design education in Canada by analyzing the combined results from the survey, interviews, and testing. It further describes how an interdisciplinary approach is being defined by various educators and if they utilize it to consciously promote creativity in the classroom.

> "Directly and indirectly, when design students can engage with peers, faculty or experts in other disciplines they become aware of how they fit within a larger community and start to develop a perception of themselves as local and global citizens. This is very important within an academic environment, as we tend to become too insular. The goal should be to expand opportunities to connect acquired knowledge with experience and for students to see how their process and decision-making can have a positive influence on people and their environment." (Interview 5).

The largest theme that emerges from this research study is the educators use of traditional methods of teaching that mainly prepares students to enter the workforce. By mimicking the design industry in their courses, many educators convey the idea of a "real world" to their students based on their own field experiences and body of knowledge. Pierre Bourdieu describes this situation as educational institutions "reproducing" the culture, instead of promoting innovation or cultural change (Matheson 2006, 55). Although, educators teach design from a variety of backgrounds such as academic, industry, or non-design related fields, not enough develop skills in students that go beyond technology and practical thinking. By following a traditional studio-based approach, students learn by a trial-and-error method, where projects are usually structured around opinions and the knowledge of a single teacher. In the *Traditional Design Model*, under the teacher's supervision, students go through a process of research and analysis, generation of solutions, synthesis, implementation and evaluation (Figure 5.0). As a result of this traditional approach of studio teaching, one that usually imitates the industry, there is little or no direct interaction with the real world.

Based on surveys and interviews, the portfolio school model is the most common type of design education in Canada. A survey participants describes their school as suffering "greatly from trying to be a portfolio school (and not succeeding at that) when it should be more about process, concept and innovation with materials. [It is] stuck in the past and has languished for years with no clear focus or vision and no communication between years." The traditional portfolio school model enables many students to get jobs

upon graduation by providing strong technical skills and practical knowledge. However, the trend of strictly following industry demands brings instability to the design discipline. As Davis notes, if design education programs are changing with "personal, or professional trends, then the students get the message that design decisions are whimsical and personal, lacking professional depth of thought." (Davis 2005). Instead of following the industry, design education should work with it and seek innovative collaborations and engagement in learning activities, breaking away from the traditional design approach. "Design education is not all about making students 'office ready', nor is it about using metaphors instead of physical structure. It is about intelligent thinking, decision making, and skill capabilities." (Davis 2005). The purpose of this research is not only to measure and analyze the state of the design education system in Canada, but also to communicate to educators why and how design education can improve. While educators are encouraged to develop their own unique methodologies and teaching styles, this research study uses an example of an interdisciplinary approach as a means to promote creativity.

Figure 5.0 Diagrammatic Representation of a Traditional Design Model
[Diagram adapted from (Dillon and Howe 2007, 73)]

5.2 INTERDISCIPLINARITY

Interdisciplinary learning is important — there is joint consensus concerning this between all educators, collaborators, and students who participated in this study over the course of three years. Students say that interdisciplinarity gives them "more real-life hands-on experience", "allows for more creativity", and introduces them to "real world applications." Even though 80 percent of survey and interview participants say that they utilize an interdisciplinary approach in the design classes they teach, this number is mostly influenced by an individual understanding of interdisciplinarity. Lack of a commonly-accepted definition leads to a lack of acknowledgment of the importance of experimental learning or conscious teaching *for* creativity.

5.2.1 Variety of Definitions and Influences

An interdisciplinary approach was presented to educators and student participants as a curriculum structure in which faculty integrate information, techniques, concepts, and theories from various disciplines to advance students' capacity to understand issues and propose new solutions that extend beyond the scope of traditional visual communication design studies (Rhoten 2006). It was communicated to all participants that an interdisciplinary approach, in the context of this study, refers to involving disciplines outside of visual communication design, including other areas, programs, professions, real clients on and off-campus to participate in the design process. However, based on the analysis of all answers, many participants have used their own definitions instead. The most common is that design as a discipline is interdisciplinary and involves various design-related fields such as *Typography*, *Photography*, *Fashion*, *Industrial Design*, etc. For example, one of the interviewees described *Sustainable Design* as the most interdisciplinary course she has ever taught, while her description of the course referred to a traditional model of teaching design (Interview 1).

Since the majority of design educators define interdisciplinarity exclusively in the context of design, there is a lack of a conscious promotion of interdisciplinary learning in Canadian design institutions. Many educators believe that students are naturally exposed to interdisciplinarity because of the diversity of design field. The traditional teaching tools described by educators, such as research, interviews, iteration, project management, and case studies should encourage students to look beyond the design discipline; however, only a few educators described co-teaching, outside expertise, cross-, multi-, and interdisciplinary methods being part of experimental learning practices they utilize.

5.2.2 Expectations

Based on the survey and interviews, design educators have predetermined expectations from their students. Fast-paced and competitive programs require students to be good time managers, independent researchers, interdisciplinary thinkers and creatives. The assumption is that many students should further develop those skills through traditional techniques and the exercises of studio-based learning. "This expectation exists at the outset of students' university studies. Students who do not have these skills seek direction from academic staff." (Spanbroek 2010, 112). However, depending on the institution and type

of course, educators usually do not seek specific outcomes, but offer an open-ended learning experience. There is little conscious teaching for creativity, but students are expected to be creative. This can result in student's frustration and growing disinterest in their studies. Some students are unable to realize their full potential. For example, one of the educators from York–Sheridan admits that their program is too intense and fast; many students loose focus or lag behind (Interview 5).

5.2.3 Types of Collaborations and Benefits

Since there is no standardized definition for interdisciplinarity, educators apply interdisciplinary learning in the ways that are the most suitable for the particular course. Based on the survey and the interviews, there are five categories of interdisciplinary collaborations in Canadian design schools: *in-class*, *campus-wide*, *client-based*, *working from within*, and *external projects*. *In-class* collaborations do not always involve other disciplines, but engage students in the use of interdisciplinary skills instead. Students are asked to use photography, drafting, painting, writing, and other skills to complete assigned course projects. *Campus-wide* collaborations incorporate available resources, where students are working with other disciplines within the same college or university. In this type of collaboration, students engage in discussions exploring the intersections between graphic design and other disciplines, while other disciplines learn about graphic design. *Client-based* collaborations, as the name suggests, involve clients coming into the classroom and introducing a real brief or guiding students through real problems. *Client-based* collaborations are usually demanding as they bring real deadlines and real issues to the table, and they always embrace an element of unpredictability. *Working from within* means that there is no collaborators involved at the initial stages of the project. Instead, students are independently asking complex interdisciplinary questions in their design work that attracts collaborators to the final stages of design. Finally, some programs are unable to implement interdisciplinary projects for various reasons, but they offer students opportunities to work on external projects. In this type of collaboration, students are expected to independently manage the projects, while working with external collaborators.

Canadian design educators were also asked to explain how an interdisciplinary approach can be beneficial to learning. The variety of answers were classified into six categories: 1) Students have a better perspective of design as an interdisciplinary subject. Aside from technical skills, students also better understand design as a diverse medium that can be used in different education and job scenarios. 2) Students develop skills that are transferable across disciplines by mastering communication, problem-solving, flexibility or adaptability, and collaborative skills, as well as gain deeper respect for other disciplines. 3) Students improve critical and conceptual thinking. Through holistic approaches, students learn to engage in the process, and develop new ways of thinking. 4) Students become more knowledgeable of the industry. Instead of working on artificial briefs, students have a chance to interact with the industry in a more direct way, which helps to shape their future design career. 5) Overall, students become more well-rounded designers. Aside from becoming better thinkers, developing technical skills, and applying creative talents, students also learn to incorporate methods, theories, and knowledge

outside of design. 6) Students demonstrate motivation and creativity by learning to take risks, embrace new working styles, and experiment with new ideas and methods.

5.2.4 Criticism

Although the majority of research participants demonstrated enthusiasm and openness towards the use of an interdisciplinary approach, they also expressed criticism towards such a method. Some educators believe that interdisciplinary learning should be optional, could substitute for the "traditional" schools, might not work for specialized programs, and might not be suitable for some programs. Some argued that interdisciplinary learning should be optional as it requires extra effort, time investment, and extensive knowledge from educators. Also, departmental structures and politics often do not allow for this type of education to occur and it could become a struggle for some design educators to change structures. Although, interdisciplinary learning is a good possibility to substitute for traditional learning, educators note that it is unlikely to happen. Most schools have established themselves over the course of decades and it would be very difficult to change the curriculum. Pedagogues also believe that this type of model might not work for specialized programs that primarily focus on technical education. Usually the courses in those programs seek more controlled outcomes. Lastly, interdisciplinary learning also might not be suitable for some programs that do not have enough support and resources. For instance, it is easier to engage other disciplines in large-scale research institutions as opposed to smaller trade schools that often specialize in a few programs.

The way an interdisciplinary approach is being implemented into design pedagogy largely depends on the type of institution. Naturally, large university programs have more opportunities to collaborate with other disciplines than colleges or small trade-oriented schools. For instance, in OCADU interdisciplinarity is primarily defined as the intersection between art, design, and liberal arts; while the program at York–Sheridan exclusively focuses on design, where students take general education courses at York, while Sheridan provides them with extensive technical knowledge (Interview 7). However, smaller programs, such as George Brown College, Grant MacEwan University, New Brunswick College of Art and Design incorporate interdisciplinarity by inviting real clients, guest speakers, or asking for external feedback from industry collaborators. Thus, large-scale programs have more opportunities, funds and sources to engage in experimental learning, but small-scale programs can be equally experimental in their pedagogy. The key is to match or even create new methods of interdisciplinary learning that best correspond to the needs of a particular program.

Given that design educators have applied their own definitions of interdisciplinarity, and that programs seek to utilize experimental learning, then the use of interdisciplinary learning in Canada is mainly defined by educators' educational and professional backgrounds. Based on the eight profiles of design educators who participated in the interviews, those, who have taught in multiple institutions, usually employ experimental learning more than those who have taught in just one or two institutions. Those educators who have also taught internationally or nationally, generally have a more diversified view on

the interdisciplinarity. However, many programs "revolve around the strongest personalities and their professional interpretations of a discipline" (Davis 2005) and they need to listen to all educators. According to experts, in a country as vast and sparsely populated as Canada, educational institutions should encourage mobility and government should find better ways to support that (Day and Grafton 1998, 213). This applies to both students and teachers.

It is important to listen to the criticism and fully understand the difficulties before engaging in interdisciplinary learning. However, the concerns expressed here are mainly associated with the established belief that studio-based approach has worked for many years and it has proven to be successful. Students are able to find jobs and make successful careers. Although the studio-based approach is an important way to teach design, there is no guarantee that it will work in the future, as our world continues to change. Educators need "to think about what the economy of the future will look like and what kinds of skills are easily transferable." (Tamburri 2012).

5.3 CREATIVITY

"Creativity is, like all brain-based functions, ethereal and elusive." (Saebø et al. 2006, 206). Since creativity is "elusive", the definitions vary from educator to educator, from student to student. Some definitions that came from the survey are: "an improvement in the projective competence, generative capacity and novelty at the front end of the design process", "a small part of innovation", and "creativity is not limited to the visual design — can be written work, simplification, scope changes, etc.", while interviewees said, that creativity "involves questioning exploration", "allows for serendipity to occur" and it "does not allow a failure." To flourish creativity, standardized processes must be challenged and hierarchy must be broken (Sobol 2012).

Although having a variety of definitions provided by educators is beneficial to a well-rounded education system, it can also work against teaching *for* creativity. Some educators could not comment on students' creativity and see it as a traditional "internal state beyond sight" or comprehension. Most educators can only discuss students' creativity based on the outcomes of student work, while assessing it. Educators need to engage in the promotion of the creative process instead of just being concerned with generating and assessing the end results. Less than ten percent of participating educators answered a question on how they promote creativity in classroom by using tools specifically designed for fostering creative thought. The remaining educators shared traditional studio-based design methods such as project management, tests, grades, group work, etc. without being able to answer whether those tools actually work *for* creativity. "Creativity begets more creativity and working across different disciplines, media and dimensions opens the doors to many more ideas and ways of thinking about things" — noted one of the educators in the survey. The majority of design educators also agreed that an interdisciplinary approach, which is experimental in its nature, works for the promotion of creativity. Some of the links between an interdisciplinary approach and creativity that design educators have identified in students are: *conceptualization beyond comfort zone, experimentation, unique inspiration, better communication skills and collaboration, curiosity and new interests*. Testing procedures have

also confirmed that students challenged their comfort zone, improved their collaboration skills, and learned "above and beyond".

Even though all participants of this study unanimously agreed that creativity is an essential part of design education, some were skeptical about using an interdisciplinary approach as a tool to promote creativity. The main concerns were: 1) creativity largely depends on the project brief, class dynamics and individual students; 2) interdisciplinarity promotes more thought than creativity; and 3) other learning factors have as much influence on creativity as interdisciplinarity. While some educators believe that the strict project briefs eliminate possibilities, others think that strictness does not interfere with students' ability to create. "There is a certain amount of creativity, but there is so much that you can do in the form before creativity starts to go overboard." (Interview 8). Class dynamics, such as how students connect to their teachers and peers can have influence on creativity in class. Secondly, some educators think that the interdisciplinary approach promotes more analytical thought, cross-, and multidisciplinary awareness rather than creativity. Students "expand their notions of how design can have impact and influence within a broader sphere and how design connects with other disciplines and areas of concern." (Interview 5). According to students who participated in the testing procedures, an interdisciplinary approach gave them real world experiences and enabled them to think practically. Since it is hard to measure all learning benefits that emerge from an interdisciplinary approach, making students think differently is an act of creativity itself. Finally, some educators were concerned that other factors, aside from dynamics, have as much influence on creativity as interdisciplinary. For example, educators need to keep students engaged by being interesting, engaging, and somewhat entertaining (Interview 3). Learning experiences become more beneficial, if teachers know how connect to their students (Interview 6).

5.3.1 Methods for Promoting Creativity

Only a multiplicity of methods can promote creativity. Even an interdisciplinary approach, the core method of this research study, cannot guarantee creativity on its own. As a result, participating educators were asked to share their methods to promote creativity whether they are classified as interdisciplinary or not. Some of these methods were implemented in the testing procedures. Based on primary and secondary research findings, this section presents the most used techniques in undergraduate Canadian design education. (Refer to *Survey Results (4.1)*, *Summary of the Interviews (4.2)*, and *Testing Results (4.3)* sections for the descriptions of other techniques).

TIMELINES

Well-designed timelines and planning are essential to good design outcomes, but sometimes they can work against creativity. "For creative design to be taught successfully timeframes and structures must be more flexible in order to allow staff and students to develop creative and innovative design solutions." (Spanbroek 2010, 117). Interestingly, based on the testing procedures in

this research, flexible deadlines worked against students. Students were less motivated to complete their work in *Testing B* with a flexible deadline, while students in *Testing C*, worked hard to meet tight deadlines.

GUIDELINES

Many institutions demand course outlines to be designed ahead of time, in a standardized manner, "30% is going to be this, and 10% is going to be that" (Interview 6). This allows for better communication with students, but works against experimental learning. Project guidelines work best when presented in a quantifiable way. "The most obvious reason for quantification of design criteria is the communication of the most information possible to the designer — information that is not steeped in technical or research jargon, but practical guidance." (Rutter 1994, 40–41). It also provides a great starting point and makes tasks more tangible. "In comparison to 'gut feeling' decisions, quantitative design measurements can be proof of due diligence in terms of product-liability exposure (Rutter 1994, 41). For instance, if 40% of the project grade comes from *creative exploration* or *experimentation*, students ensure that they invest their time into it. Having a portion of the grade dedicated to creativity causes students to explore and experiment more (Interview 8). During the testing process, students did better in *Testing C* partially because guidelines were more constrained, they stated all the objectives, presented an overview, and historical background in comparison to the guidelines provided in *Testing A* and *B*.

MEANINGFUL PROJECTS

Some interview participants believe that assigning projects that have specific meaning to students foster creativity. One of the design educators thinks that young students would be more successful designing promotional material for a favourite band rather than a brochure for the government (Interview 3). For example, students during testing procedures, have demonstrated a higher level of enthusiasm designing posters for the food bank on campus than designing the logo for the seniors organization.

REALISTIC PROJECTS

"The more realistic the scenario is — the better the output tends to be." (Interview 8). The majority of design educators acknowledge that realistic projects can be more insightful in terms of introducing students to real industry practices. Realistic projects also usually look more presentable in a student's portfolio upon graduation. Even if the nature of the project does not involve an external collaborator, projects still can be designed in a realistic manner. One of the educators believes that this type of project gives him more control over the outcomes, while allowing for more exploration to happen (Interview 4).

MAINTAINING THE SUSTAINABILITY

Interdisciplinary projects are typically unlikely to repeat from year to year or from course to course. However, to ensure that all students receive an equal chance to participate, introducing sustainable projects is an asset. Choosing an existing annual event or festival is a great example of a project that could be incorporated every year. This also allows students to plan and strategize ahead, even prior to enrolling on the course, which could lead to creative and positive outcomes (Interview 8).

GRADING

Grading can help students to understand project expectations better. A design educator from a large-scale design program argues that students should be given grading criteria at the beginning of the project. Educators should be "transparent and up front" about their expectations (Interview 8). Specific criteria also helps students with project management; for example, how much time and effort should go into research, process work or any other component. This approach eliminates "surprises and misconceptions" and students generally accept the grading system and stress less about the assessment (Spanbroek 2010, 117). One of the anonymous survey participants shared, "As an extra incentive, I attach a certain percentage of my project grades to innovation/creativity. By making innovation an explicit requirement of a project, students are more motivated to try something new. Additionally, I praise students that try something novel — even if they fail." Many participating educators also argue that interdisciplinary projects are harder to assess. However, an educator from OCADU disagrees. By getting to know students well enough, as a teacher "you can actually see their contribution because you know their working style... You really know who does what. But it does require a lot of attention from the teacher." (Interview 7). Although the testing procedures in this research study did not deal with grading, a student in *Testing C* mentioned, "if it isn't graded, I feel less motivation to come up with a finished artwork, when trying to balance other courses."

CROSSDISCIPLINARY METHOD

"We are normally more creative when we have others to support us." (Saebø et al. 2006, 212). Although the lines between inter-, mutli-, and crossdisciplinary approaches are thin, the crossdisciplinary approach uses the knowledge of other disciplines to present or explain the design problem. One of the educators at York–Sheridan who teaches *Sustainable Design* to fourth year students feels that "this type of approach is essential for learning about sustainability because the principles and issues are not confined to one discipline but require a holistic, systems-based approach." She usually expands her projects to touch on other disciplines such as architecture, landscape architecture, interior design, product design, education, ecology, and sociology (Interview 5).

MULTIDISCIPLINARY METHOD

A multidisciplinary approach is often defined as drawing from multiple disciplines to redefine problems outside of normal boundaries of one discipline. "Learning to work creatively and effectively in true multidisciplinary teams is a critical part of successful design education." (Norman 2011). It is a highly beneficial process for students to work with other disciplines directly in the ideal settings, but the reality is that not all projects, courses, programs are involving a multidisciplinary method. Educators can bring their multidisciplinary knowledge to the teaching based on their own knowledge, education, or industry background, without directly collaborating with another discipline. For instance, an educator from Ryerson was teaching visual communication design students from the perspective of an interior design (Interview 1), while another educator was teaching graphic design from an architectural standpoint (Interview 3). According to another educator, from York–Sheridan, "to be successful, one cannot confine to four walls." He uses multidisciplinary methods when teaching

Package Design to draw on the history of packaging, production methods, etc. in order to inspire his students (Interview 2).

CASE STUDIES

"Case studies are a useful tool for research and teaching that focus on the transition between theory and practice." (Breslin and Buchanan 2008, 36). Case studies could be introduced by outside experts or by the instructor. In the first scenario, students get inspired when a professional presents their own work and introduce specific examples. In the second situation, the educator brings existing examples of industry work and analyzes case studies for students. Eventually, students can independently start "to pull those pieces apart, so they can see tangibly how each step of that process works" (Interview 7). In *Testing C*, students were given an exercise on retro poster designs revolving around food. The objective was to analyze each poster by identifying how specific visual language tools used (colour, typography, layout) helped to convey the message. In summary, students tackled the task by providing quality feedback and generating ideas, since they also had to create their own versions of posters based on the case studies. (Appendix 4.3 [S]).

PROJECT MANAGEMENT

Although guidelines help to organize and plan projects, project management is essential for sustaining them. Teachers need to use their project management skills, especially, when incorporating an interdisciplinary approach. Since such an approach usually involves higher levels of unpredictability, projects should be flexibly managed to satisfy course objectives and collaborator's needs. Also interdisciplinary possibilities sometimes do not present themselves until the last minute, and teachers must use their judgment and project management skills to either use the possibility or turn it down. (Interview 6) Also, teaching students about time investment is essential. Educating them that creativity can be a vigorous effort should help them to understand how crucial it is to invest more time. "Work comes with time," according to an educator from the University of New Brunswick. (Interview 3).

MAKING PROJECTS REAL

Realistic projects and *making projects real* are two separate techniques. Inspiring students to turn their class explorations into real projects is a great way to foster creativity. It also shows students that design can address real issues from within; thus transforming visual communication solutions into larger social projects. For example, one student was interested in researching how cosmetics effect the human body and wanted to create a phone application prototype. Instead of having a typical prototype, the instructor suggested to search for people concerned with activism, who would be interested in making the application real and publicly accessible (Interview 6).

CO-TEACHING

The idea of co-teaching reappeared multiple times throughout the survey and interviews. Aside from teaching students a wider perspective, educators also enjoyed incorporating this technique into their pedagogy. Co-teaching can happen within a design discipline or can engage other disciplines or collaborators.

Co-Teaching with Design Disciplines

One of the most effective methods to bring a rich experience to the design classroom is to co-teach with colleagues across fields of design. For example, an educator who comes from an interior design background co-taught with another industrial designer a furniture course at the architectural program. It is "a process of analysis that enables somebody to step in from a different disciplines and still read the projects and comment on them" (Interview 1). Another educator from OCADU, often teaches upper level courses with another professor. According to her, this helps to distribute the workload as well as benefit students by providing contrasting opinions (Interview 7).

Co-Teaching with Other Disciplines

Another effective method is to co-teach with educators from non-design disciplines. For instance, an educator at York–Sheridan was teaching a course on 3-dimensional design, while at the same time there was a sculpture course. The design educator proposed to the sculptor to bring his students to design classes, so he could lecture them on architecture and 3-dimensional modeling, while sculptor could take design students and lecture them on major sculpture principles of understanding form, volume, etc. This co-teaching experience led to unexpected creative results and students' eagerness to learn (Interview 6).

BRINGING OUTSIDE EXPERTISE

Refer to *4.2.3 Summary of the Interviews*.

MOTIVATION and CONFIDENCE

Fostering creativity in undergraduate education is a challenging task because departmental structures and standardized projects sometimes work against it. Students need to be reassured that they have potential to succeed and there is no single "right answer" to everything. "The older young people get, the less they have courage to try other ways of thinking and the more they try to avoid being wrong" (Sahlberg 2010, 338). Students need to learn to be wrong and accept failure as important parts of the creative process (Sahlberg 2010, 343). It becomes the teacher's job to motivate students, to engage "their sense of possibility and give them the confidence to try." (Saebø et al. 2006, 210). "As teachers we must motivate and be credibly knowledgeable." (Interview 2). One of the instructors believes that students' level of creativity solely depends on the teacher's ability to motivate (Interview 2). Also refer to *Summary of the Interviews Part 3: Methods for Promoting Creativity (4.2.3)*.

BRAINSTORMING

According to the survey results, brainstorming is the most used technique in Canadian post-secondary design institutions to foster creativity. Usually brainstorming involves a slightly-delayed judgment before shaping the solution, and that is when the creativity takes place. Although the technique of brainstorming has been used since at least 1948, it largely evolved to meet specific project needs. One of the successful adaptations of brainstorming is when students create diverse, seemingly disconnected ideas instead of a few, well grounded thoughts, "anything goes, no matter how crazy." (Brâncuşi 2010, 87). One student participant listed group brainstorming next to creativity as one of the benefits to interdisciplinary learning promoted in *Project C*. However, there

are some drawbacks with brainstorming, such as: impracticality of some ideas in real life, insufficient means of generating top solutions to the problems, and it could block further creative thinking (Lau et al. 2009, 74). Recent research also demonstrates that "brainstorms can generate a neurological fear of rejection and that groups are not necessarily more creative than individuals" (Sobol 2012).

EMOTIONAL ENGAGEMENT

Creativity is a complicated psychological process dominated by various emotions (Lau et al. 2009, 78). Similarly to *Meaningful Projects*, educators should seek to engage students into the problems on a deeper level, such as emotionally. Emotional engagement involves student's truly caring about the issues or problems at hand. However, evoking emotional engagement could also mean making projects joyful and somewhat humorous. As described in *Testing Results (4.3)*, students enjoyed working on one of the projects because it involved humor. One of the students informally reported in the questionnaire, "Fun times."

INCORPORATING EXERCISES

Another great way to make students think beyond boundaries is to incorporate various exercises into the classroom. Although, it might be trickier with large seminar classes, one of the educators at York–Sheridan does so by engaging students in designing or making something related to the lecture so they can test the principles or concepts introduced. According to her, "I feel this helps to promote creativity as the act of making or learning by doing helps to embed the principles and concepts and the student may be more likely to remember them and test them within their own creative process." (Interview 5).

MIND-MAPPING

Mind mapping was another technique mentioned in the survey and the interviews. It generally involves cognitive organizational tools for defining the nature of the problem and making unexpected connections. By using break-down as a method, students do not change the solutions, instead they question the problem-solving process and its framing (Lau et al. 2009, 74).

PROBLEM SOLVING

Problem solving methods are essential to the design process at any stage. The main misconception, according to an educator from York–Sheridan is that students solve the problems they define themselves. It is identical to the classic situation, where clients know what their problem is and asking for a re-branding. But the reality is that branding might not be the issue, and the actual problem might be in marketing or business strategy instead. As a result, educators must be critical of students and push them to search for more problem sets before jumping into problem solving (Interview 6).

ANALOGICAL THINKING

Osborn, the creator of the brainstorming technique, once pointed out that many quality ideas come from seeking a substitute component. Thus, the idea of simply changing something that already exists formulates new creative thinking. Osborn also developed this idea into a technique called SCAMPER. SCAMPER stands for *Substituting*, *Combining*, *Adapting*, *Magnifying*, *Putting to a different use*, *Eliminating*, and *Rearranging* (Lau et al. 2009, 76). Although some participants in the survey mentioned utilizing this technique officially,

many design educators unconsciously use elements of this technique in the promotion of new ideas in class.

MAINTAINING THE MOMENTUM

Student's ability to create also depends on the continuity of an assigned project. Some projects are quick and simple, while others are long and tedious. Sometimes, when students are given too much time, especially in the initial brainstorming stage, they over-think and get stuck. A challenge for students with longer projects is to maintain the momentum to carry concepts through to the end. (Interview 5).

SLOWING DOWN THE PROCESS

"Quantity of solutions is useful, but novelty of creative output is also of crucial importance." (Gallate et al. 2012, 147). Even though *maintaining the momentum* could work for initial parts of the project, slowing down the process can benefit the execution or reflection stage. By slowing down the process, design educators also build confidence; students do not need to feel like they need to go from "0 to 100 immediately", instead they are taken through a step by step process (Interview 3). Students who generally have more time to explore and investigate in the research phase, are more likely to come back with in-depth questions that they have time to back up with not only secondary research, but also with primary research by doing interviews, testing, and meetings (Interview 6).

MUSIC

Some survey participants have mentioned music as a tool to promote creativity in design. It can either be integrated to make students more creative, while working on projects in studio-time or music can become part of assigned projects or exercises. One of the design educators believes that music can keep students engaged. Young students care about music, and having a project that deals with promotional material for a favourite band could be a source of motivation (Interview 3).

BASIC TECHNOLOGY

In programs where resources dominate, professional content is being reduced to techniques and skills "at the expense of complex thinking and depth of knowledge." (Davis 2005). However, computers cannot make people creative, but using basic technological tools can help students to experiment. "Tools are extensions of our hands. They only do what we make them do: a pen makes a line when and where you move it." (Wasco 2007, 15). Regardless of student's technical abilities, or a program's resources, many design educators advocate using basic technology such as point-and-shoot cameras and basic design software to complete some projects. The imperfection of basic technology helps students to process ideas in their entirety instead of focusing on technical details and final products. Also refer to *Summary of the Interviews (4.2.3).*

BREAKS

Psychologists argue that task-specific fatigues or neural fatigues are caused by the exhaustion of resources necessary for producing solutions. Giving students a break can reinvigorate these resources, making them available once more to address the problem at hand (Gallate et al. 2012, 147). Physical or psychological rest from the project can also encourage creativity. According

to a study done on on-conscious processes in creative settings, participants who were given a break to reflect in a so-called "incubation period", but were aware that they will be tested on their productivity, demonstrated higher levels of creativity. However, participants who were not aware of the entire process, showed less creativity (Gallate et al. 2012, 148). As a result, students derive greater benefit from the incubation period when they are aware that they would be tested again. In all testing procedures conducted in this research study, students had plenty of time to reflect since each experimental project was not in the core of their mandatory studies.

GROUP WORK

Group work is essential to promote creativity. Usually studio-based classes in Canada are small; according to one of the educators, on average she teaches 18 to 25 students at a time (Interview 7). Smaller class sizes also result in improvements in a variety of important learning factors, such as creative behavior, problem-solving abilities, and an increase in opportunities for participation and expression (Warner and Myers 2010, 32). Given that studio classes are not too large, usually students can work as one big group or be split into smaller groups, depending on the nature of the project. Also refer to *Summary of the Interviews (4.2.3)*.

PHYSICAL ACTIVITIES

Physical activity such as walking, yoga or mediation not only relaxes students, but also helps them to focus better (The Chronicle of Higher Education 2002). Physical activities are essential to clearing students' minds. While some instructors incorporate some physical movement through gathering students into groups, engage in group critiques, and encourage them to walk around the class, while in studio time, most physical activities that could actually promote creativity come from student's independent willingness to clear the mind. Most projects that involve movement take time outside the class, where students are asked to visit galleries for inspiration or create photo-essays from around the city.

SKETCHING

Sketching is an important tool for visual communicators that does not require special skills. "Just as one need not be a great writer to be a world-class thinker, nor a great mathematician to be a world-class scientist, [...] why does one have to be a great drawer to be a world-class computer designer?" (Norman 2011). Thus, quick sketching or thumbnail generation could be more beneficial to students than refined drawing. In all testing procedures of this research, students were encouraged to use a quick sketching technique, which helped them to stay motivated without feeling that they are spending too much time. Particularly, students in *Testing C* were given ten minutes to work in four to five people groups to brainstorm and sketch the ideas regarding the project.

PROCESS WORK

"Creativity is not generated by the end product or necessarily the subject; creativity is part of the process," according to anonymous survey participant. Process work is essential to pushing students outside their boundaries because the processes of analysis, observation, and reflection are essential to good outcomes. "The education needs to emphasize the design process. A different

design process can give different design outcomes" (Interview 1). Without predetermined expectations, students feel free to explore. "It is creative if you are going all over the place. You are creating the whole thing." (Interview 4). Process work helps to move away from the traditional model of "problem and solutions" to a "state 1, state 2 of the system" situation (Findeli 2001, 14). It pushes material artifacts to the background and focuses on the subject and the participants within a process of creation. Only a few design educators in this study emphasized the importance of the process work in their classes.

ITERATION

The process of iteration can happen at any stage of the project and is essential to successful outcomes. "What is very important is that we will take people through a stage of research, evaluation of the research, and then synthesis." Because this process is well structured and polished by years of practice, it usually appears to students as a very linear approach. "People think that it is step-by-step process, but what they do not understand [is that] it is a reiterative process." Students should reflect on their recent work whether it is a design prototype, article analysis, or rough sketch. Going back-and-forth between various stages of development brings students a holistic understanding of a problem set. "[The] idea of iteration, it is like baking. You do not just put stuff in the pot, and bake it, you need to fold it all in." (Interview 6).

PLAYING and GAMES

"Deliberative discourse is a form of play, and for play to yield great ideas, we have to take it seriously." (Sobol 2012). Play is defined as a messy, ambiguous and sometimes non-rational activity. In spite of, or because of its messiness, it can stimulate the development of cognitive and interpretative skills (Delamoir 2007, 2). The links between play and curiosity encourage people to go beyond safe and familiar territory. (Delamoir 2007, 2). Some of the games and play activities mentioned in the survey and interviews are: *ice breakers, peer teaching, personality testing, encouraging "the silly", drama or theatrical reenactments, "think alouds", card sorting*, and *IDEO cards*.

ROLE PLAYING

Role playing is one part of large-scale *Play and Games* methodology. Role playing is a technique that allows the participant to act as another person in order to better understand his/her character within a given time limit (Lau et al. 2009, 76). In the context of design education, students are often asked to adapt roles of a typical design agency, where there is a strict hierarchy. Depending on the student's university/college level, the roles are either carefully assigned in the introductory classes, or students have freedom to select their own roles in the upper level classes. One design educator clearly states to the students what responsibilities come with each role that students need to accept and be accountable for. As a result, students can clearly evaluate each individual part of the project (Interview 7). In *Testing C*, students were assigned the roles of design agency workers and then they had to criticize the work from the standpoint of a specific role. For example, *production personnel* were responsible for overseeing printing issues and costs, *art director* managing the entire process, while a number of designers were focused on the design.

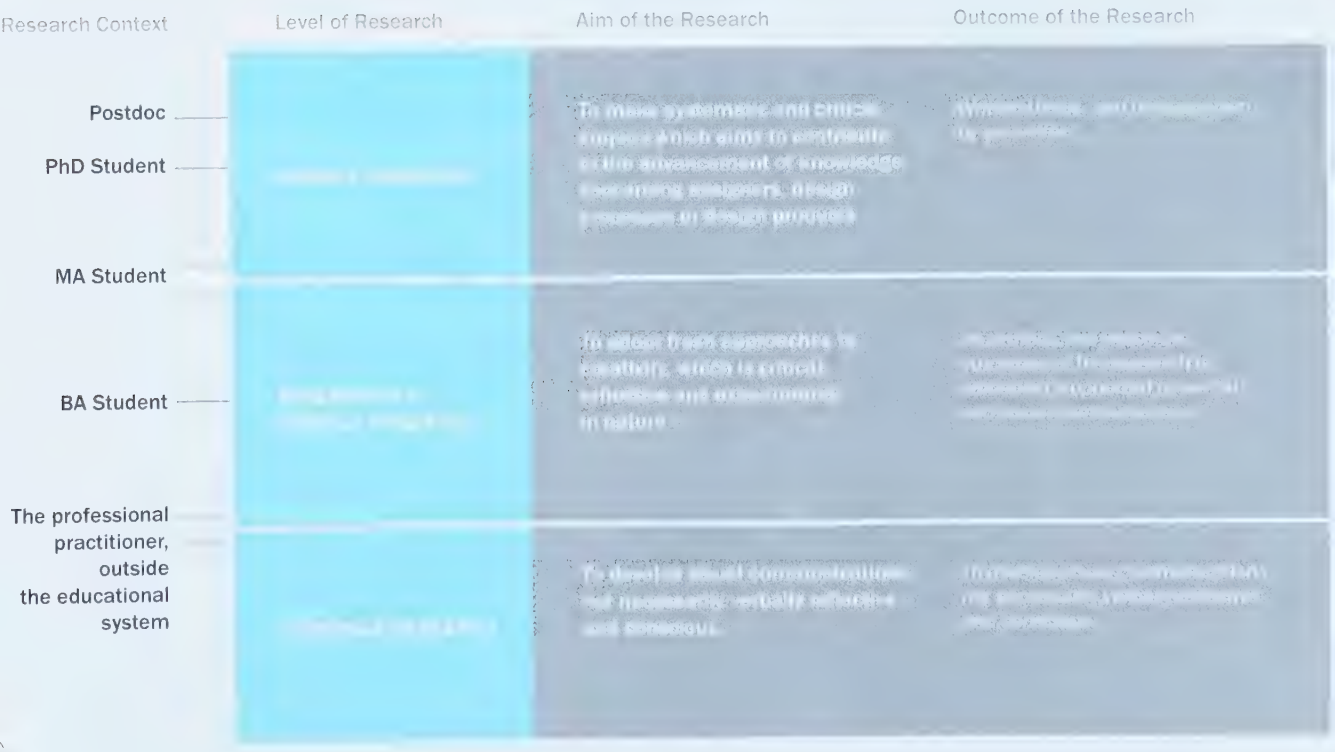
PRESENTATIONS

Student presentations are essential to shaping communication skills in students, but they also help students to re-evaluate their own work. When students have to present their work to someone else, it forces them to be more analytical (Interview 6). On the contrary, another design educator fundamentally thinks that presentations are not engaging and do not benefit students (Interview 7). However, having collaborators go over the students' presentations in testing procedures generally raised engagement from students. Perhaps, when students are exposed to hearing news voices, other than their teachers or peers, they pay more attention.

RESEARCH

"Research is never neutral." (Wang 2010, 175). According to Sjöberg, there are three different types of research utilized in design: *personal research, research as critical practice*, and *formal research* (Sjöberg 2009, 73). Based on the model proposed by Sjöberg (Figure 5.1), undergraduate students only embrace personal research and are introduced to research as critical practice. Participating design educators have also confirmed that this is the most used type of research students engage in. However, by incorporating another discipline into the design process, students are more likely to be exposed to *formal research*. For example, during testing processes, outside collaborators were introducing students to issues that required them to go beyond the scope of personal research. Also refer to *Summary of the Interviews (4.2.3)*.

Figure 5.1 Types of Research [Table adapted from (Sjöberg 2009, 74)]



INTERVIEWS

Interviews are one of the primary research techniques educators use to promote idea flow with students. Regardless of whether there is a real collaborator or not, students are asked to independently interview people who might help with the process. One of the interviewees believes that it pushes students out of their comfort zone, and also that it is a great way for student to make new connections (Interview 6).

"SPEED DATING"

This unique technique was developed by an educator from OCADU. Just like in speed dating, where people have a limited time to introduce themselves before moving to another table, students are given three minutes each to present their idea to the person at the table. Then, everyone moves to a new table. "People immediately gravitate towards the people that have similar ideas, or who share conceptual approaches, whom they would like to work with." However, the primary goal of this exercise is to form strong groups, and to achieve that "people with adjacent skills or even opposites skills and approaches: are paired up. The educator typically asks students to do a second round, where they look at future partnerships with people who have knowledge or skills in other areas (Interview 7).

TESTS

Ironically, standardized tests that normally are seen to lessen creativity could actually encourage it. There are various types of tests, including formal and informal. While informal tests can be presented as a spontaneous game, formal tests require early preparation. According to one design educator, this formal testing technique works well for types of classes that include components of theory, such as *Typography* (Interview 4).

EXTERNAL FEEDBACK

Regardless of whether the project is interdisciplinary or not, educators can bring an external assessor to provide final feedback to students. In the projects that involve real clients, unlike a teacher who guides students on a regular basis, clients could provide a fresh and unbiased perspective based on their impressions. Usually students are more respectful and tentative to client's needs and perhaps are more willing to explore new things (Interview 8). For example, in *Testing C*, the collaborator sent thorough feedback to comment on students' final work. (Appendix 4.3 [M]).

REFLECTION and SYNTHESIS

Naturally, students "learn design by designing" (Sonntag 2006, 110). However, students also learn to design by becoming aware of the process of design – how resolutions were formed and what thinking was used. According to an educator, "Design is very much about reflection; it is vitally important." Although research is essential to design work, it is worthless unless applied. It is essential to guide students through the reflective process and the direction; this can help students to form new sets of questions (Interview 6). During the testing process, at the end of each project, students were asked to share their opinions with their peers as well as to provide feedback in the anonymous questionnaire. By analyzing

the final results, and summarizing the process, students acknowledged their strengths and weaknesses. They better perceive projects in their entirety, which helps them to understand the process better and learn new skills and processes for the future.

DOCUMENTATION

Refer to *Summary of the Interviews (4.2.3).*

PEER- and SELF-EVALUATIONS

Peer and self-evaluations are part of a larger *Reflection and Synthesis* approach. Unlike the reflection and synthesis process, which could be shared with others, peer-and self-evaluations are usually anonymous. Evaluations promote more openness and idea flow in each student. They could also eliminate the pressure from students who do most of the work in the group. One of the observations made by the educator is that students usually have difficulty being candid and open (Interview 7). Although this is a challenging process, it is crucial for students to being able to look back and understand their body of work (Interview 6). These evaluations also help teachers to assess students' work beyond the submitted visuals.

5.4 CONCLUDING REMARKS

> "An interdisciplinary approach seems to offer a way forward. The traditional way of structuring design education is to start with a generic study basic practical skills and abstract design principles, and then to start specialising in a particular design discipline. This emphasis on specialisation has been the hallmark of modern education and indeed of the modernist project general. While this approach has been useful in developing rational and instrumental knowledge it is of limited use when it comes to developing holistic understandings and knowledge of more complex systems such as creativity and innovation." (Matheson 2006, 60).

Interdisciplinarity breaks the boundaries of tradition and encourages a different type of design education to emerge, better preparing students to approach the complexities of the modern world with creative minds. The majority of Canadian educators surveyed agree that design education needs to adapt new strategies for the twenty-first century and to move away from traditional methods that might become obsolete in the future. However, adapting experimental learning goes against departmental structures of well-established design institutions in Canada. A studio-based approach, the backbone of Canadian design programs, is used to prepare students to enter the workforce by imitating design industry in an educational environment. Although there are many benefits to studio-based learning, design education must offer new experimental methodologies. This research study encourages design educators to re-evaluate the *Traditional Design Model* and proposes an interdisciplinary approach as a prospective way to encourage creativity and innovation.

6.0 CONCLUSION

Creativity is essential to our survival. "We rely on creativity. We depend on creativity. Yet, all we have been able to do is to hope that certain creative individuals will supply us with new ideas and new possibilities." (De Bono 2009, 21). As the world continues to change, there is a need for people to use creativity to address existing and emerging problems such as climate change, globalization, sustainability, waste-management and many others.

Creative people are flexible thinkers who "[make] unexpected connections." (Interview 1). "They readily desert old ways of thinking and strike out in new directions." (Guilford 1959, 172). Creative people have the ability to formulate new problems rather than depending on others to define them, and have the ability to transfer learning outcomes across different contexts. (Von Stamm 2008, 8). Creatives maintain high standards, accept confusion, and the higher risks of failure and learn to view that failure as normal part of the process (Perkins 1984, 19). Although design education strives to support experimental learning, the most accepted model of learning, a studio-based approach, often works against it. During studio time students are usually given superficial briefs that have predetermined outcomes that primarily focus on technical considerations and aesthetics, mimicking industry's needs. Institutions and departments need to be more open for collaboration. "Institutions that are broken down into own singularity of disciplines do not allow [for interdisciplinary collaboration] to exist." (Interview 6). It is necessary to expand design practices and "to include investment in the arts, culture, and all forms of innovation and creativity" (Florida 2012).

Creativity can be learned. Creativity is not just a sudden flash of inspiration, but relating a concept to a particular body of knowledge. The existing body of knowledge is essential for creatives to make new connections (Von Stamm 2008, 2). Even though "universities are the hubs of the creative economy" (Florida 2012) and creative learning, much of what students learn is driven by the idea of "the right answer" and a standard way of attaining it (Sahlberg 2010, 338). But standardization is an enemy of creativity; hence, implementing experimental learning becomes essential to foster creative thinking. Students need environments that support imagination, where they can go though tangential or even bad ideas before coming up with a good one (Sobol 2012). "Sensitivity towards trying new things or alternative ways of doing old things should start from teacher communities." (Sahlberg 2010, 343). Faculty and institutions are encouraged to look out for new ways to collaborate and experiment to develop students' creativity. "Only when we begin to see all of these investments — scientific, economic, artistic, and other — as mutually reinforcing parts of the same creative whole will we begin to take advantage of even a fraction of our latent human potential." (Florida 2012).

"Fostering creativity is synonymous with the integration of disciplinary and interdisciplinary approaches." (Kandikoa 2012, 194). Collaboration throughout discipline boundaries is often seen as a condition for creativity and innovation. It is rare for one individual to come up with original ideas that have great value without interacting with other people (Sahlberg 2010, 343). Faculty often face difficulties establishing interdisciplinary collaborations because of the predetermined structures in institutions. However, the flexibility of an interdisciplinary approach allows for different types of collaboration to happen, such as *in-class*, *campus-wide*, *client-based*, *working from within*, and *external*. Design educators often believe that an interdisciplinary curriculum should also be optional since it might not work for specialized programs or might not be suitable for a whole program. As there is no single standardized interdisciplinary method that works for every student, educators are encouraged to seek the method that corresponds well to their practice, program, and institution.

"Design is opportunistic in borrowing knowledge from many sources and shaping such knowledge into its own action-oriented process." (Poggenpohl 2009, 20). Design can integrate knowledge from many disciplines and make that knowledge effective, but only if properly understood and studied (Buchanan 1998, 66). The design educators who participated in this study believe that an interdisciplinary approach can be an effective alternative to traditional studio-based learning. The implementation of an interdisciplinary approach demonstrates a number of benefits such as the development of a wider perspective of design as an interdisciplinary subject, betterment of skills that are transferable across disciplines, improvement of critical and conceptual thinking, deeper knowledge of the industry, ability to become well-rounded designers, and the demonstration of motivation and creativity in students. Learning to work creatively and in interdisciplinary teams is "a critical part of successful design education" (Norman 2011). However, an interdisciplinarity approach does not advocate against studio-based curriculum; instead, it invites educators to explore new ways of teaching design beyond the traditional studio classroom.

As the demand for creativity and innovation continues to grow, there is a need for educational institutions to embrace unconventional methods that will help students become knowledgeable and contributing global citizens. A new form of design education needs to emerge, "one with more rigor, more science, and more attention to the social and behavior sciences, to modern technology and to business." (Norman 2010). Instead of following industry, design education needs to "work as an equal partner" (Buchanan 1998, 64) by seeking new ways of interdisciplinary learning within the institution and beyond. This research identifies how an interdisciplinary approach can positively contribute to a design education of, and for, the future.

7.0 EXPOSITION

The entire research investigation was summarized under one detailed infographic (Figures 7.0, 7.2, and 7.4). The information collected was rich and diverse; therefore the goal was to highlight the main points from the survey, interviews, testing procedures, and secondary literature review. Although the graphic consists of three distinct parts: *Interdisciplinarity*, *Creativity*, and *Methods Used to Promote Creativity*, the objective was to emphasize the links between all mutually-dependant parts. To visually support all the information presented in the infographic, photographs of student work, exhibits, and work in-progress from testing procedures was used (Figures 7.1 and 7.3).

Figure 7.0 Research summarized in infographic

Figure 7.1 Student final work from *Testing C* (close-up)

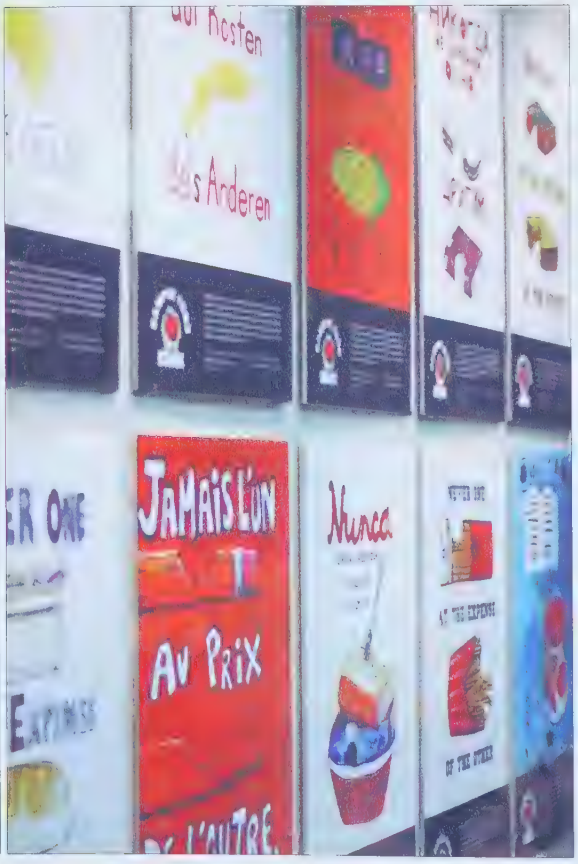
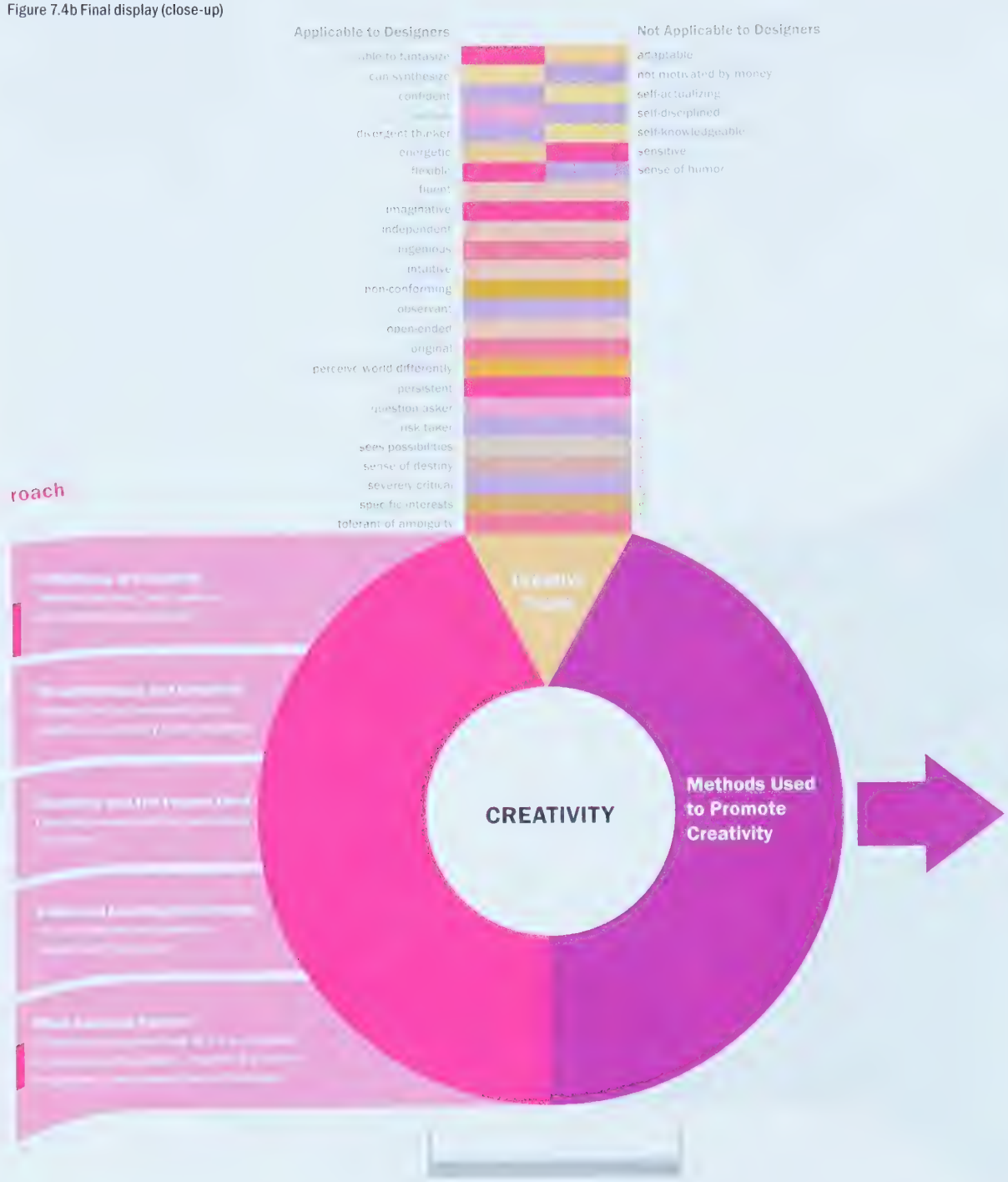


Figure 7.2 Final display

Figure 7.3 Student final work from *Testing C*

Figure 7.4a Final display (close-up)

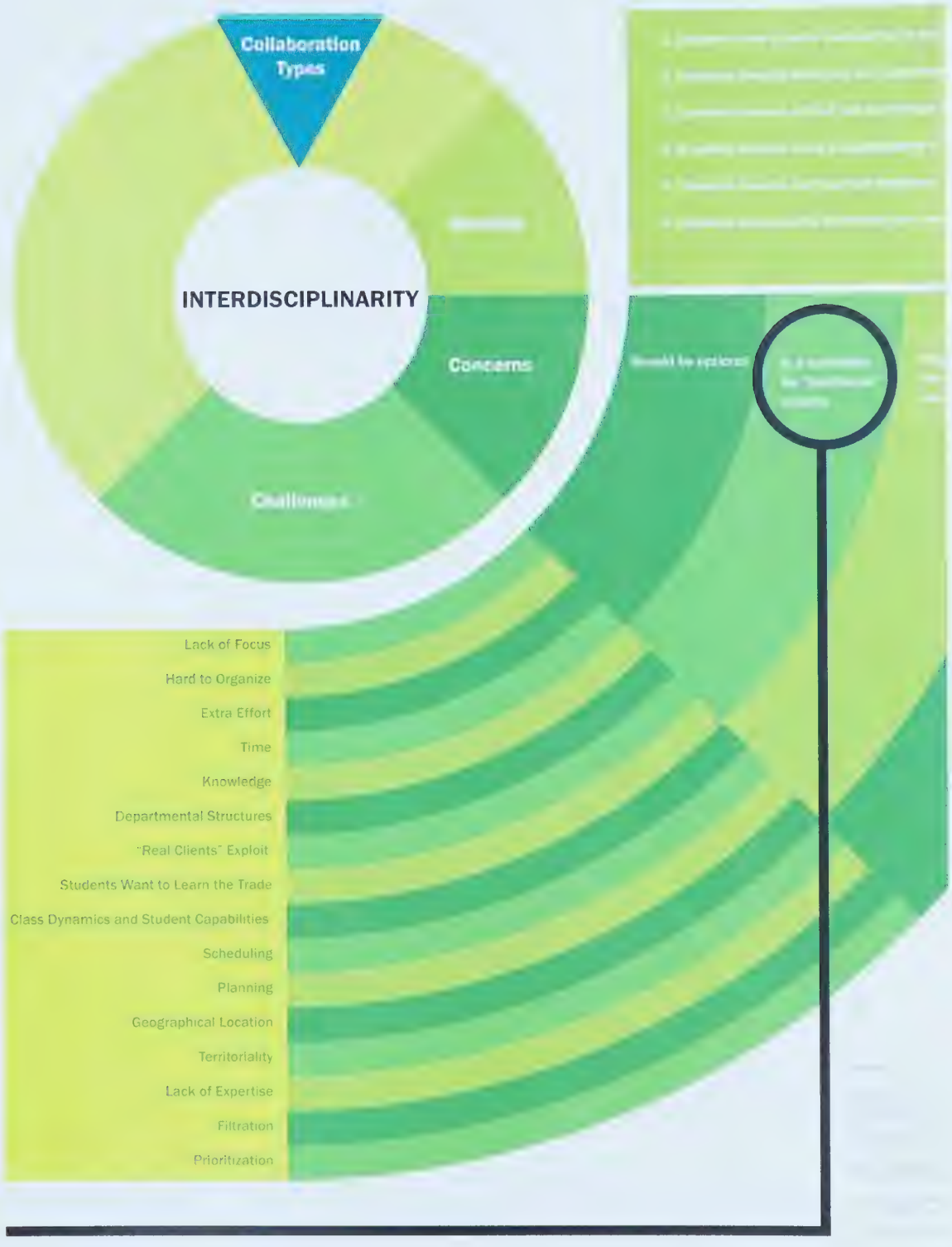
Figure 7.4b Final display (close-up)



Definition of Creativity

Creativity is, like all brain based functions, ethereal and elusive." (Sacbo et al. 2006, 206) Since creativity is "elusive", the definitions vary from educator to educator, from student to student. Some anonymous definitions that came from the survey are: "an improvement in the projective competence, generative capacity and

Figure 7.4c Final display (close-up)



N INTERDISCIPLINARY
CH TO PROMOTE CREATIVITY:
Canadian Post-Secondary Design Education

[illegible]

rounded design process without creativity,
a number of practical methods for promoting
the undergraduate level including an
ver there has been little integration of an
e university curriculum

ndian design education, this research identifies the
odel defines the importance of an interdisciplinary
links between an interdisciplinary approach and
s for promoting creativity. Design educators from
s research by participating in a national survey
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test interdisciplinary teaching approaches. The
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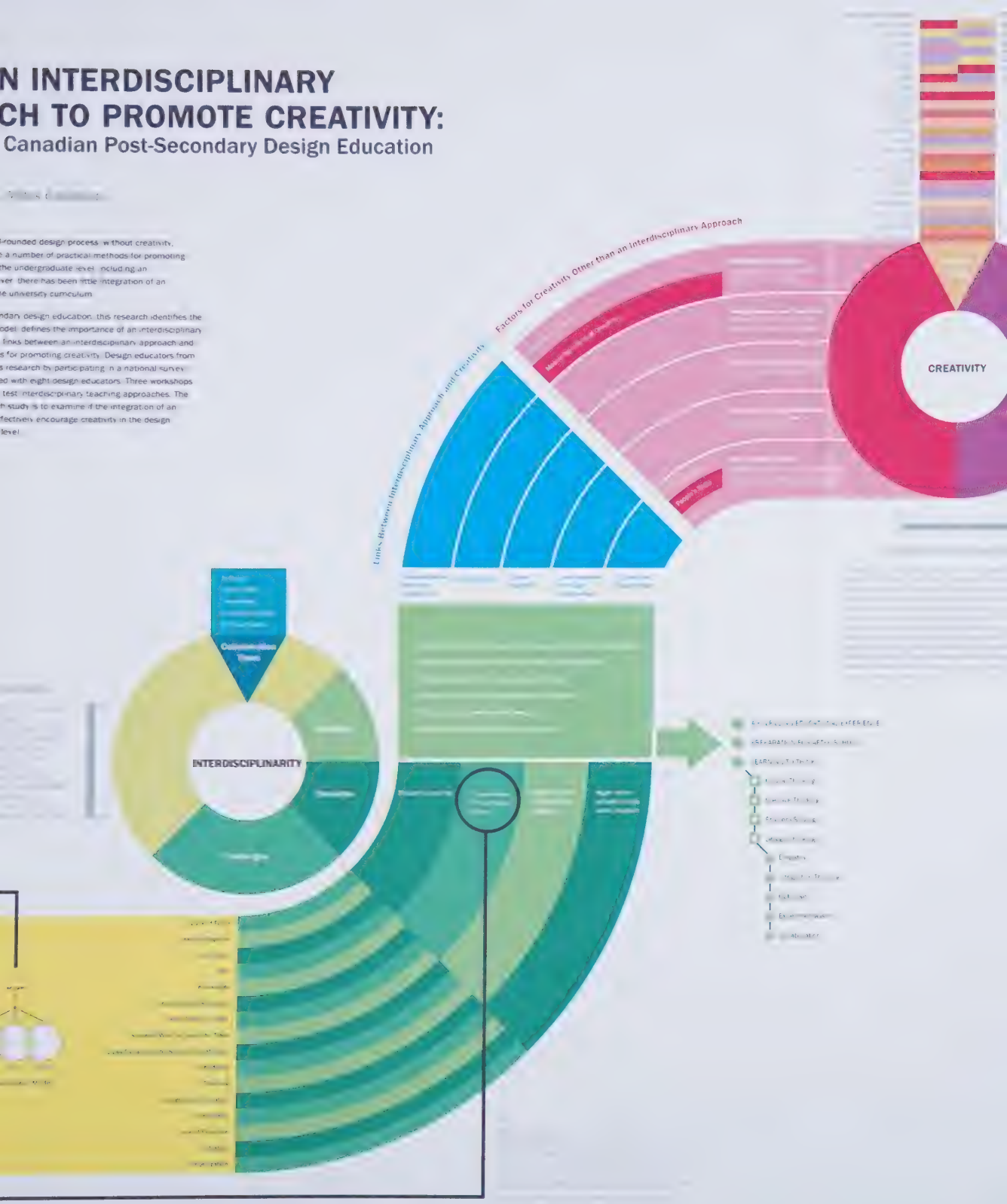

8.0 FUTURE EXPLORATION

This research investigates the use of an interdisciplinary approach to promote creativity in the undergraduate design education. As all participating educators and students have provided valuable insights to form conclusions, a number of new questions that go beyond the scope of this research were raised. As a result, there are many other external factors that constitute the current design education model and influence the use of interdisciplinarity and its effects on creativity.

Industry and Education

There is lack of communication between design industry and education. Often this disconnect results in industry's prejudice against schools that are unable to keep up. "As design professions continue to morph and blur boundaries, we have discovered that professional practices and other organizations have an underlying bias towards educational programs that offer integrated discipline options." (Cramer 2005). There is a clear task division in many organizations and businesses: graphic design firms want to hire graphic designers, not industrial designers, for example. However, the point of undergraduate education is not strictly job training (Helfand 2012). As blurring the boundaries is an effective way to teach students to become well-rounded professionals, there is also a risk of students being unable to focus. Further exploration would require looking at specific industry demands, and how schools can better prepare students for future careers without lowering educational standards. Perhaps, design education needs to establish its own unique paradigm instead of trying to mimic other disciplines (Wang 2010, 177). There is a need to further investigate how design schools can work together with the industry through interdisciplinary collaboration.

Teaching Practices

The traditional teaching model in art and design relies heavily on one-on-one tutorials and group critiques in a studio-based environment (Trigwell 2002, 70). Since there is usually little or no formal teacher training for teaching design at the post-secondary level in Canada, educators tend to develop their teaching styles based on their own experiences as students (Strickfaden and Heylighen 2010, 30). As a result, a new generation of educators tends to repeat teaching methodologies from their mentors. Educators who break this tradition are usually those that have been exposed to multiple collaborations or various professional and educational practices in their careers. The emerging trend in this research study is that those educators are more likely to consciously promote teaching for creativity

or implement experimental methodologies such as an interdisciplinary approach into their teaching practice. Further exploration needs to focus on identifying links between teachers' educational and professional background and their influence on students' capabilities to create.

Student Mobility

Lack of provincial migration within the Canadian post-secondary system often leads to difficulties establishing inclusive environments that foster creativity. "What I find most odd is the strictly Provincial nature of education in Canada. I really do not think it is healthy." (Helfand 2012). According to Dr. Helfand, more than 96% of students go to university in their home province because transferring from one province to another to go to school has major barriers. "Labour market mobility is a sine qua non of a vibrant, creative economy, and I don't think Canada's current system encourages that." (Helfand 2012). It is important to understand that student mobility may build not only human capital, but social capital as well. In a country as vast and sparsely populated as Canada, it is sometimes difficult for individuals in one region of the country to understand the problems of those in other regions; therefore, educational institutions should encourage mobility and government should find better ways to support it (Day and Grafton 1998, 213).

Secondary and Post-Secondary Education

To understand creative processes better, it is important to investigate the relationship between secondary and post-secondary institutions and how they teach creativity. There is a fundamental belief that students become less willing to take risks with age. According to Dr. Helfand, "Our schools beat curiosity out of our children before they get to university." (Helfand 2012). However, he also believes that "curiosity is an innate human trait", and it could be re-linked in the right environment, when students enter post-secondary schools (Helfand 2012).

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Appendix 1.0
ETHICS APPROVAL

Notification of Ethics Delegated Approval

Study ID:	Pro00018965
Study Title:	Promoting Creativity in Design Education: Exploring An Interdisciplinary Approach
Study Investigator:	Lyubava Fartushenko
Supervisor:	Aidan Rowe
Approval Expiry Date:	April 30, 2012

Thank you for submitting the application above to the Arts, Science, Law REB. Federico Spinetti has reviewed your application for human research ethics and finds that your proposed research meets the University of Alberta standards for research involving human participants (GFC Policy Section 66). On behalf of the Arts, Science, Law REB, I am providing **delegated research ethics approval** for your proposed research.

The research ethics approval is valid for one year and will expire on April 30, 2012.

A request for renewal must be submitted prior to the expiry of this approval if your study still requires ethics approval at that time. If you do not renew before the renewal expiry date, you will have to re-submit an ethics application.

If there are changes to the project that need to be reviewed, please file an amendment. If any adverse effects to human participants are encountered in your research, please contact the undersigned immediately.

Sincerely,

Dr. Stanley Varnhagen
Acting Chair, Arts, Science, Law REB

Note: This correspondence includes an electronic signature (validation and approval via an online system).

Appendix 4.1 [A]
Design Institutions Invited to Participate

4 YEAR PROGRAMS

Alberta:

University of Alberta (Edmonton)
Visual Communications Design

Alberta College of Art & Design (Calgary)
Faculty of Visual Communications Design

University of Lethbridge (Lethbridge)
Bachelor of Fine Arts (New Media)

Mount Royal University (Calgary) (not on GDC list)
Bachelor of Applied Interior Design

University of Calgary (Calgary) (not on GDC list)

British Columbia:

Simon Fraser University (Burnaby)
The School of Interactive Arts and Technology

Thompson Rivers University (Kamloops)
Bachelor of Design

Vancouver Island University (Nanaimo)
Bachelor of Arts; Graphic Design Major

Emily Carr University of Art + Design (Vancouver)
Faculty of Communication Design

Kwantlen Polytechnic University (Richmond)
Bachelor of Design, Graphic Design for Marketing

Manitoba:

University of Manitoba School of Art (Winnipeg)
Foundations (Drawing, Basic Design, and Introduction to Art)
Graphic Design

Nova Scotia:

Nova Scotia College of Art and Design University (Halifax)
Bachelor of Design, Major in Interdisciplinary Design

Ontario:

Ontario College of Art and Design (Toronto)
Faculty of Design (Graphic Design, Advertising)

Sheridan College (Oakville)
(Affiliated with York University)

York University (Toronto)
Bachelor of Design Honours Degree

3 YEAR PROGRAMS

Alberta:

Grant MacEwan University (Edmonton)
Design Foundations

British Columbia:

Capilano University (North Vancouver)
Illustration/Design: Elements and Applications, IDEA

Kwantlen Polytechnic University (Richmond)
Diploma in Graphic Design for Marketing

Manitoba:

Red River College of Applied Arts, Science & Technology (Winnipeg)
Graphic Design

Newfoundland:

Academy Canada (St.John's)
Multimedia Graphic Design

Ontario:

Carleton University (Ottawa)

Cambrian College of Applied Arts and Technology (Sudbury)
School of Art and Design: Graphic Design,
Art And Design Fundamentals

Canadore College of Applied Arts and Technology (North Bay)
Graphic Design

Conestoga College Institute of Technology and Advanced Learning (Kitchener)
Graphic Design

Durham College (Oshawa)
School of Media, Art and Design:
Foundations in Art and Design, Graphic Design

Fanshawe College of Applied Arts and Technology (London)
School of Design: Graphic Design

George Brown College (Toronto)
School of Design

La Cite Collegiale (Ottawa)
Arts et design: Conception graphique

Georgian College of Applied Arts and Technology (Barrie)
Graphic Design, Art and Design Fundamentals,
Graphic Design Production

Humber College Institute of Technology & Advanced Learning (Toronto)
School of Media Studies & Information Technology;
Graphic Design, School of Applied Technology:
Design Foundation

Mohawk College of Applied Arts and Technology (Hamilton)
(affiliated with Wilfred Laurier University, Toronto)

Sault College of Applied Arts and Technology (Sault Ste. Marie)
Graphic Design

Seneca College of Applied Arts and Technology (Toronto)
Graphic Design

St. Clair College of Applied Arts and Technology (Windsor)
Graphic Design Program

St. Lawrence College (Kingston)
Graphic Design Program

2 YEAR PROGRAMS

Alberta:

Grande Prairie Regional College (Grande Prairie)
Interactive Digital Design Specialization:
Visual Arts Diploma Program

Keyano College (Fort McMurray)
Visual & Performing Arts: Visual Art and Design Diploma

Southern Alberta Institute of Technology (Calgary)
Digital Graphics Communications,
New Media Production and Design

Northern Alberta Institute of Technology (Edmonton)
Digital Media and IT: Visual Communication,
Web Design and Development

British Columbia:

British Columbia Institute of Technology (Burnaby)
Digital Arts department: Graphic Design.
Design Essentials, Graphic Communications Technology

Kootenay School of the Arts at Selkirk College (Nelson)
Digital Arts and New Media

Langara College (Vancouver)
Career Studies: Design Formation
Continuing Studies: Advanced Typography, Digital Media,
Electronic Media Design

College of New Caledonia (Prince George)
New Media Communications and Design Diploma

Pacific Design Academy (Victoria)
Graphic Media Design

Selkirk College (Nelson)
(Affiliated with Kootenay School)

Thompson Rivers University (Kamloops)
Digital Art and Design (DAAD) Program

Center for Arts and Technology (Kelowna)
Graphic And Digital Media Design

New Brunswick:

Center for Arts and Technology (Fredericton)
Graphic And Digital Media Design

New Brunswick Community College (various locations)
Animation and Graphics,
Electronic Game - 3D Graphics, Graphic Design

Nova Scotia:

Center for Arts and Technology (Halifax)
Graphic And Digital Media Design

Newfoundland:

College of the North Atlantic (St. John's)
Graphic Design

UNDER 2 YEAR PROGRAMS

Newfoundland:

Corona College Grand Falls (Windsor)
Multimedia and Graphic Arts

Ontario:

Academy of Design (Toronto)
Graphic Design Program

Kennedy College Of Canada (Toronto)
Graphic Design

Prince Edward Island:

Holland College (Charlottetown)
Graphic Design Program

Saskatchewan:

Saskatchewan Institute of Applied Science and Technology (Prince Albert)
Digital Graphic Design (Distance Learning)
Graphic Communications **(Regina)**

1 YEAR PROGRAMS

New Brunswick:

New Brunswick Community College (various locations)
Art Fundamentals

Nova Scotia:

Nova Scotia Community College (Halifax
School of Applied Arts and New Media:
Graphic & Print Production, Graphic Design

British Columbia:

Vancouver Film School (Vancouver)
Digital Design Program

Kwantlen Polytechnic University (Richmond)
Foundations in Design, FIND one year certificate program

UNDER 1 YEAR PROGRAMS

Alberta:

Reeves College (Calgary)
Computer Graphic Design

British Columbia:

The Art Institute of Vancouver (Burnaby)
Graphic Design-Bachelor of Applied Design,
Advanced Graphic Design-Diploma,
Advertising-Diploma, Graphic Design-Diploma,
Graphic Design and Foundation for Design-Diploma

LaSalle College International (Vancouver)
Graphic Design Program

Northern Lights College (Dawson Creek, Courtenay)
Visual and Graphic Communication Arts

Vancouver College of Art & Design (Vancouver)
Graphic Design

Surrey College (Surrey)
Digital Graphic Design Diploma program

Vancouver Career College (Kelowna)
Computer Graphic Design

Vancouver College of Art and Design (Vancouver)

Vancouver Community College (Vancouver)
Digital Graphic Design

3 YEAR UNIVERSITY PROGRAMS, 2 YEAR OR 3 YEAR *CÉGEP*

Quebec:

Concordia University (Montréal)
Design and Computation Arts

Université Laval (Québec City)
Baccalauréat en design graphique

Université du Montréal (Montréal)

Université du Québec à Montréal (Montréal)
Bachelor's degree in communication

Université du Québec en Outaouais (Gatineau)
Majeure en design graphique

Dawson College (Montréal)
Graphic Design

Cégep Ahuntsic (Montréal)
Graphisme

Cégep de Jonquière (Jonquière)
Intégration Multimédia

Cégep de Rivière-du-Loup (Rivière-du-Loup)
Graphisme

Cégep de Saint-Jérôme (Saint-Jérôme)

Cégep de Sainte-Foy (Sainte Foy)
Graphisme

Cégep de Sherbrooke (Sherbrooke)
Department de Graphisme

Cégep du Vieux-Montréal (Montréal)
Graphisme

Cégep Marie-Victorin (Montréal)
Graphisme

Collège Inter-Dec (Montréal)
Digital Arts School

Collège Salette (Montréal)
Design Graphique

Institut Grasset (Montréal)
Effets visuels, Anumation 3D

Académie internationale du design inc (Montréal)
Computer Graphics and Design, Advertising Design,
Web Design

Rosemount Technology Centre (Montréal)
Computer Graphics Techniques

Appendix 4.1 [B]
Survey Questions

Promoting Creativity in Design Education: Exploring An Interdisciplinary Approach

Consent Form for Design Educators to Participate in Survey

Thank you for taking your time to participate in Promoting Creativity in Design Education: Exploring An Interdisciplinary Approach survey.

This survey is voluntary and you are free to skip survey questions. In addition, all the data is being collected anonymously. You are free to withdraw from the survey any time up until the "Submit" button is pressed at the end of the survey. Completion of the survey will take approximately five minutes.

All the reports will include only anonymous results. Please do not provide your name anywhere or provide information that could possibly identify your name, title or responsibility. Only collective quantitative data will be reported. Any potentially identifying information from any quotes included in reporting results will be removed from open-ended responses prior to being reported. The results may also be presented at academic conferences or published in academic journals.

If you have any questions about this survey please contact Tatyana Fartushenko: fartushe@ualberta.ca, (780) 492-7877.

The personal information requested on this survey is collected under the Authority of Section 33 (c) of the Alberta Freedom of Information and Protection of Privacy Act for the purpose of creating an optimal work and learning environment at the University

Continuing with this survey implies consent to participate. This survey is completely voluntary.

Next

Promoting Creativity in Design Education: Exploring An Interdisciplinary Approach

Survey for Design Educators

Promoting Creativity in Design Education: Exploring An Interdisciplinary Approach

This research study examines further possibilities for visual communication design education to move beyond its traditional and historic studio based curriculum. In particular, it focuses on the use of an interdisciplinary approach in the design classroom to promote creativity. For the purpose of this research, an interdisciplinary approach is defined as a curriculum structure in which faculty integrates information, techniques, concepts, and theories from various disciplines to advance students' capacity to understand issues and propose new solutions that extend beyond the scope of traditional visual communication design studies.* For the purpose of this study, an interdisciplinary approach refers to involving disciplines outside of visual communication design programs, including other areas, disciplines, professions, and real clients, to participate in the design process.

Below are six questions that will help to define the importance, methods, advantages, and disadvantages of an interdisciplinary approach and its links to creativity.

*Diana Rhoten, "Interdisciplinary Education at Liberal Arts Institutions," Teagle Foundation White Paper (2000), http://www.pkal.org/documents/IDEducationAtLiberalArtsInstitutionsRhoten.cfm

***1) Please select one of the options that best describes your undergraduate design program:**

- 4 year design diploma/degree
- 3 year design diploma/degree
- 2 year design diploma/degree
- 1 year design diploma/degree
- Other (please specify)

***2) Does your program incorporate an interdisciplinary approach in its design curriculum?**

- Yes
- No

***3) Based on your previous answer, select on of the following options.**

If you selected yes, do you feel that such an approach is beneficial to students? Please state any reasons

If you selected no, do you feel that such an approach could be beneficial to students? Please state any reasons

*4) What in-class activities do you use to promote creativity? [select more than one if applicable]

- Brainstorming
- Mind Mapping
- Drawing / Sketching
- Moodboards / Collages

Other (please specify)

5) Do you think students are generally more creative while working on the interdisciplinary projects? Explain.

6) Based on your experience, what are the advantages and disadvantages of using an interdisciplinary approach in the classroom? Explain.

Powered by SurveyMonkey

Appendix 4.1 [C]
Survey Results

1. Please select one of the options that best describes your undergraduate design program:

4 year design diploma/degree	62.0%	49
3 year design diploma/degree	16.5%	13
2 year design diploma/degree	10.1%	8
1 year design diploma/degree	2.5%	2
Other (please specify)	8.9%	7

- Bachelor of Fine Art 4 years
- One year diploma in Design Management (graduate)
- 4 year specialized honours degree
- 5 year design degree - Visual Communication Design
- 4 year Bachelor Computer Science
- 3-year Bachelor of Fine Art/4-year BFA (Hon.)
- 1 year Design Foundations Certificate

Answered question 79
Skipped question 2

2. Does your program incorporate an interdisciplinary approach in its design curriculum?

Yes	79.7%	63
No	20.3%	16

Answered question 79
Skipped question 2

3. Based on your previous answer, select on of the following options.

Yes	81.0%	64
No	19.0%	15

Answered question 79
Skipped question 2

a) If you selected yes, do you feel that such an approach is beneficial to students? Please state any reasons.

- advance critical thinking (27/4/2012 8:35 PM)
- Yes, it is highly beneficial, as it introduces students to new perspectives and gives insight into the reality of professional visual communication design. (18/4/2012 9:41 AM)
- yes as the field of digital media (our subject) is multidisciplinary/interdisciplinary by nature (13/4/2012 5:26 PM)
- I'm not totally clear on your definition of interdisciplinary approach when you indicate '... disciplines outside of visual communication design programs, including other areas, disciplines, professions and real clients, to participate in the design process.' If by this you mean related disciplines line architects, engineers etc, by which

I'd define related fields then yes it is beneficial. Although we do not use real clients and do not see this as a benefit in learning as this is a slippery slope in many aspects (5/1/2012 6:31 PM)

- Definitely. Students from our program are expected to be able to work with individuals from many roles. Students get to understand the strengths of other areas and understand how their expertise contributes to solutions. (14/12/2011 3:54 PM)
- Yes. Interdisciplinary curriculum is completely necessary for students exiting into a trans-disciplinary world / workplace. (14/12/2011 12:42 AM)
- It's easy for art and design students to get locked into one style, mode or frame of reference. An interdisciplinary approach forces them to consider other ideas and methods. (31/10/2011 6:26 AM)
- absolutely, as it fosters a much more enthusiastic and creative result (28/8/2011 5:32 PM)
- The nature of design practice is interdisciplinary. Much of the accumulated knowledge that forms a graphic designer's education comes from other disciplines: gestalt psychology, cognitive theory, cultural studies, etc. (6/7/2011 10:50 AM)
- Yes. More knowledge can only be a good thing. (4/7/2011 8:06 AM)
- yes, students learn to communicate to non-designers (23/6/2011 8:54 AM)
- Yes, it makes them more well-rounded. It fosters a respect of the other disciplines that they will likely work with. (21/6/2011 11:36 PM)
- Yes, it's important that the students get a glimpse of the social context in which they will be practicing. While our program has some interdisciplinarity, we could (and should) certainly do more. (20/6/2011 9:30 AM)
- The future of design is NOT and can not be based on the singular view of visual communication fundamentals but on a broader, more inclusive view that must include behavioural psy, social anth, awareness of world issues, challenging established business practices, innovation, strategic thinking, etc.)17/6/2011 9:14 AM)
- Yes, because by its nature design must bridge the gap between art and science. This requires designers to be well versed in artistic skill and scientific theories and methods. Depending on the specific artefact that the designer is planning they may require yet more specific knowledge that will help the designer understand the technical and social components related to the design of this artefact. (16/6/2011 4:42 PM)
- Expose students to different thinking approaches and problem solving at all levels from ideation to innovation (16/6/2011 12:07 AM)
- Yes. Communication Designing requires multiple forms of communication therefore it requires the designer to be able to understand how each vehicle can add value to what they need to communicate. (16/6/2011 11:15 AM)
- Yes. Students are able to approach a design issue with a broader spectrum of knowledge than pure design-related knowledge. (15/6/2011 12:02 AM)
- yes, creativity begets more creativity and working across different disciplines, media and dimensions opens the door to many more ideas and ways of thinking about things (14/6/2011 12:31 AM)
- Design practice has become interdisciplinary and education should reflect the industry. (13/6/2011 10:29 PM)
- Yes. Broadens horizons which is essential in the field of communication. (13/6/2011 4:04 PM)
- Yes, it reflects current practice in industry. (13/6/2011 12:10 AM)
- The program does incorporate projects with the photography department and has been very beneficial to students to give them a taste of art directing photoshoots and working with professional photographers. It also involves "real" projects where students interact with real world clients (13/6/2011 10:35 AM)
- helps to draw on all their strengths (13/6/2011 9:40 AM)
- Design affects (or is affected by) everything. Any border is arbitrary. (13/6/2011 9:06 AM)
- Yes, since design requires content from others as well as collaboration with others to obtain such content. (12/6/2011 9:59 PM)
- Yes; it offers them a chance to work with and learn from the practices of other disciplines and their way of thinking and seeing the world. Additionally, interdisciplinary work reflects more accurately the kind of 'real world' conditions that many/most designers will be working under. (12/6/2011 4:21 PM)
- The question you ask determines the answer you get, so multiple methods are beneficial (8/6/2011 10:27 AM)
- Broadens student career options, provides experience working in multi-disciplinary team environment. (8/6/2011 9:01 AM)
- Avoids a tunnel vision approach to a discipline of study (7/6/2011 7:10 PM)

- broadens horizons, more to draw from (6/6/2011 9:48 PM)
- I have answered yes but our "interdisciplinary" approach might still be considered core design concepts by some. We use technology to teach design. Online components to give out resource and collect / critique work, Facebook, Youtube, blogs for sharing ideas. (6/6/2011 12:11 AM)
- Including information from other disciplines provides greater context, knowledge and tools to draw on in developing a design solution, and will inevitably provide greater insight into the issues and therefore a better solution. (6/6/2011 10:36 AM)
- Importance of visual literacy in contemporary modes of communication. (6/6/2011 9:56 AM)
- Yes – they gain perspective on how and why things are relevant in various disciplines. (5/6/2011)
- Design is in it nature interdisciplinary work. Fundamentally there are basic skills the students need to learn but if our job is to prepare them for after school then we have to approach it as a diverse medium. (2/6/2011 1:06 PM)
- Just like design problem-solving in general, MD approach exposes different facets of a problem, allowing many access points to analyze and solve it. (30/5/2011 1:23 PM)
- It is the reality of the profession today. Research, writing, design, photography, and new media skills are essential (27/5/2011 3:13 PM)
- Yes. hybridity is the new normal. (26/5/2011 6:37 PM)
- Yes. Design work is complex, and thus collaborative- team-based. (26/5/2011 2:26 PM)
- Yes, all art and the art is interdisciplinary, not would to would be a disservice (26/5/2011 11:44 AM)
- Yes: more integrative approach to design, broader perspective on responsibilities incumbent on designers (25/5/2011 11:27 AM)
- Yes, because students will be required to carry on interdisciplinary work as professional designers (24/5/2011 4:37 PM
- Yes. It would be difficult for students to get a good understanding without approaching design from several points of view. (24/5/2011 10:33 AM)
- Yes. Design is interdisciplinary in itself so the most exposure students can get the better (24/5/2011 8:50 AM)
- Provides ability to develop wholistic design approaches (24/5/2011 7:39 AM)
- Expand the opportunity to work on a holistic approach to design solutions (23/5/2011 1:33 PM)
- New media crosses boundaries (23/5/2011 6:41 AM)
- It works to promote conceptual and critical thinking, giving students a greater breadth of tools with which to communicate (22/5/2011 7:34 PM)
- L'interdisciplinarité restera toujours une bonne approche pour les étudiants, ne serait-ce que pour la motivation face aux projets à réaliser. (22/5/2011 7:31 PM)
- Yes, helps them work independently or in interdisciplinary settings. (22/5/2011 9:22 AM)
- Students become better thinkers, conceptually and technically, when they are pushed in diverse directions. Design is an answer to a question. The ability to analyze and conceptualize is as important as technical skill. (21/5/2011 10:45 PM)
- To "design" is to "create an experience", the better the designer understands the human experience, the better the output. (21/5/2011 6:59 PM)
- Yes. (21/5/2011 1:17 PM)
- Yes. The contemporary design world requires interdisciplinarity of its practitioners. (19/5/2011 3:54 PM)
- We only do it a little. Interdisciplinary work is valuable. Success depends on the nature of the project and participants. Students need a broader perspective on how design relates to the context of the greater community. (19/5/2011 3:09 PM)
- Yes, students understand that the nature of design practice is interdisciplinary (19/5/2011 2:02 PM)
- Our graduates move into a range of disciplines of design, therefore we have to incorporate interdisciplinary thinking/theory/skills which are completely transferable. (19/5/2011 1:46 PM)
- Students develop skills that transfer across discplins and strengths enhance weak areas. (19/5/2011 1:18 PM)
- Absolutely so. The world does not work in a vacuum, and specializing tends to magnify specificity and unless always vigiliant in incorporating other causal and influential effects, perspective may be lost. (19/5/2011 11:28 AM)

- Yes. Wider understanding of the role of design in problem solving. Focus is on the process, not specific solutions. Allows for collaboration. (19/5/2011 9:03 AM)
- Broad exposure to materials from art & design, interactive technology & programming, cognition, art, social sciences, media and games – its a broad level university education rather than a focused art & design school practical education. (17/5/2011 9:26 AM)
- Ours is first a general university degree, second an education in working across disciplines and third an opportunity to special in an area of digital media, design or informatics. Our students learn how to think, work with others and do effective design work. (17/5/2011 7:50 AM)
- Yes, it gives them a variety of perspectives to draw on when designing. (17/5/2011 7:22 AM)

b) If you selected no, do you feel that such an approach could be beneficial to students? Please state any reasons.

- Good for introduction in all design field, not so good to find a serious and well defined career (7/7/2011 6:49 PM)
- Yes, but it's impossible because of the multiple subject we have to see (29/6/2011 7:12 AM)
- Yes, but in a one-year program it's hard to implement as there are already time pressures. (13/6/2011 5:58 PM)
- An interdisciplinary approach could give more context to the practice of design. (13/6/2011 8:54 AM)
- An interdisciplinary approach is incorporated in some ways through specific courses but not throughout the whole program. I believe an interdisciplinary approach works for some subjects within visual communications but may not necessarily be appropriate for every aspect of the curriculum. Where it is used, it is extremely beneficial for students as they are exposed to a broader context beyond their own discipline. This is very important for fostering collaboration and the skills required for participatory models within the design process. (13/6/2011 8:08 AM)
- Yes, because it would provide a larger scope of activity through which to design, and would provide more realistic scenarios. (6/6/2011 2:42 PM)
- It currently isn't part of our program, though some would argue it is there informally. I feel it should be, and strive to approach my design layout courses with this in mind. I'm very committed to this idea because I feel it best represents current and future professional design practices. (6/6/2011 12:37 AM)
- Yes, definitely. An interdisciplinary approach would broaden the spectrum of design possibilities and utilize the potential of design as an applied discipline more successfully (3/6/2011 8:09 PM)
- Would be beneficial, but the structure of curriculum remains essentially traditional (1/6/2011 12:59 AM)
- Yes it would be incredibly beneficial. Our program suffers greatly from trying to be a "portfolio school" (and not succeeding at that) when it should be more about process, concept and innovation with materials. It's stuck in the past and has languished for years with no clear focus or vision and no communication between years. (25/5/2011 9:59 AM)
- Yes, if it is not at the expense of the primary field of study. Should be an option. There are many cross-over fields emerging in most disciplines and the lines are blurring. (24/5/2011 2:05 PM)
- Yes. (24/5/2011 11:39 AM)
- I believe design as a discipline lies at the boundaries of diverse disciplines, so an interdisciplinary approach in design education is extremely beneficial in developing a holistic understanding of design. (23/5/2011 12:50 AM)
- Yes as it would give our students a chance to brainstorm solutions with other disciplines. (22/5/2011 9:58 PM)
- I think it is very helpful in creating good designers. The skill set that young designers learn at school is pretty much the same wherever you go. Students will be pretty good at typography, colour theory, know some history, layout, etc. What will make them interesting and creative and good designers is the other learning they are doing or have done. (19/5/2011 8:30 AM)

4) What in-class activities do you use to promote creativity? [select more than one if applicable]

Brainstorming	92.4%	73
Mind Mapping	62.0%	49
Drawing / Sketching	86.1%	68
Moodboards / Collages	65.8%	52
Other (please specify)		43

- role playing / peer teaching / studio practices (14/12/2011 12:42 AM)
- site-specific tours (28/8/2011 5:32 PM)
- Taking a walk (7/7/2011 6:49 PM)
- Matrix (6/7/2011 10:50 AM)
- analog drawings, creating metaphors, visual rhetoric, the SCAMPER technique, pushing for many possible solutions before choosing one (20/6/2011 9:30 AM)
- free and open group discussions, encouraging the "silly", force fitting, etc. (17/6/2011 9:14 AM)
- As an extra incentive, I attached certain percentage of my project grades to innovative/creativity. By making innovation an explicit requirement of a project, students are more motivated to try something new. Additionally, I praise students that try something novel - even if they fail. (16/6/2011 4:42 PM)
- idea exchange during project critiques (16/6/2011 12:07 AM)
- User-centred observation (16/6/2011 11:15 AM)
- Sketch models (14/6/2011 12:31 AM)
- Involving music in design process, thumbnails, working in groups, brainstorming 'trees', visual diaries, photographing and collecting objets trouvés (13/6/2011 4:04 PM)
- Card sorting, role playing (13/6/2011 12:10 AM)
- Research, Sharing of interesting sites, designs, shows and exhibits. Encouraging students to attend conferences and inviting guest prominent guest speakers to both speak and participate in the class with students (13/6/2011 10:35 AM)
- Listening to music, watching videos/movies/trailers, collecting 3D objects, finding quotes/song lyrics/text passages that relate to the subject, inviting "chance" to the design process (13/6/2011 8:54 AM)
- Small and large group discussions; bringing in guest speakers and critics to offer another point of view (13/6/2011 8:08 AM)
- Strangeness, paradox, re-framing in any way possible (12/6/2011 9:59 PM)
- Discussions, student presentations, (8/6/2011 10:27 AM)
- Rapid visualization mixed with writing and collage. (6/6/2011 2:42 PM)
- Ice breakers, personalty testing and games (6/6/2011 12:11 AM)
- Visual analysis, agile methods (6/6/2011 9:56 AM)
- Debate, critique, experiements, discussions, critiques. (5/6/2011 7:13 PM)
- Self-assessing their own work through proposed questions. (2/6/2011 1:06 PM)
- Rationalizing approach to (1/6/2011 12:59 AM)
- Edward de Bono, How to Have Creative Ideas; field research; IDEO cards (30/5/2011 1:23 PM)
- Interface creation (26/5/2011 6:37 PM)
- My classes are large lecture (26/5/2011 2:26 PM)
- Prep work (26/5/2011 11:44 AM)
- Sketch modelling (24/5/2011 4:37 PM)
- Physical enactments (24/5/2011 10:33 AM)
- Participatory activities such as games, drama, think alouds, etc (24/5/2011 8:50 AM)
- Iterative design approaches, comprehensives, design rationales (24/5/2011 7:39 AM)
- Rule-based parameter collision (23/5/2011 6:41 AM)
- Critiques (22/5/2011 9:58 PM)
- Recherche visuelle, inspirations, analyse de ce qui existe déjà sur le sujet à développer, etc. (22/5/2011 7:31 PM)
- Virtually every in-class activity is used to promote creativity, including, ie: researching and defining target

audience(s), interviews, group discussions, process mapping, prototyping, user testing, role playing, etc. Even interpretive dance! (21/5/2011 6:59 PM)
- Mini-presentations + discussion (21/5/2011 1:17 PM)
- Reading of critical theory. Applying theory to experimental projects. (19/5/2011 3:54 PM)
- Group work, research, writing, critical thinking (19/5/2011 3:09 PM)
- Games and collaborative activities (19/5/2011 2:02 PM)
- Research, conceptual development, design processes/strategies, individual/team based projects etc. (19/5/2011 1:46 PM)
- Research, juxtapositioning. (19/5/2011 1:18 PM)
- Free discussion, blue sky approach, nothing is wrong, your opinion is valued, this is the opportunity to test your voice, your ideas, etc. Guidance is given in these exercises as well as vocabulary and possible ways of thinking prior to engaging in it. (19/5/2011 11:28 AM)
- Your list is too narrow. Our list would have more than 50 entries, including all those above. (17/5/2011 7:50 AM)

5) Do you think students are generally more creative while working on the interdisciplinary projects? Explain.
Answered question 72
Skipped question 9

- If they decide to engage yes. (27/4/2012 8:35 PM)
- This depends on the individual student, but on the whole, students tend to be more creative when working on interdisciplinary projects. For example, students may be able to think up ideas, but on their own may be unable to realize them. Interdisciplinary projects help them to execute their ideas to a higher level and give them to confidence as designers. (18/4/2012 9:41 AM)
- yes because they get more diverse ideas (13/4/2012 5:26 PM)
- No, I don't think students are more creative when working on interdisciplinary projects, but I do believe them to be just as creative. Creativity is not generated by the end product or necessarily the subject, creativity it is part of the process. Having professionals and outside speakers/ presenters/ experts engage with students about their particular field of expertise allows the students to gain a different perspective about the subject but creativity isn't necessarily fostered by these people. (5/1/2012 6:31 PM)
- No. Sometimes when working with others the won't push for the best/optimal design (extra design iterations, etc.) External influences such as group dynamics and workload will also influence creativity. Creativity is not limited to the visual design - can be written work, simplification, scope changes,etc. (14/12/2011 3:54 PM)
- Not always - they are often more intimidated by what they don't know or understand about a discipline that is not their major field of study. (14/12/2011 12:42 AM)
- I believe there is more exploration in these type of projects and the exploration process often leads to creative thinking. (31/10/2011 6:26 AM)
- Often yes, as we are all creatures of many interests. (28/8/2011 5:32 PM)
- Yes if the theme is well defined in a concise briefing. Not to many details (7/7/2011 6:49 PM)
- Broadening the scope of investigation, integrating theories and concepts from other disciplines expands the range of possibilities for solutions. (6/7/2011 10:50 AM)
- Yes. It allows students to conceptualize beyond their comfort zone ... to see beyond what's already been done in their field. While appropriation will always be a part of learning, the ability to birth new ideas is greatly enhanced by stepping outside one's usual palette. (4/7/2011 8:06 AM)
- I cannot say one way or the other (23/6/2011 8:54 AM)
- Hard to say. (21/6/2011 11:36 PM)
- I hope that by bringing the creative process into focus with the students, they will be more creative when approaching ANY project they do. (20/6/2011 9:30 AM)
- Depends on your definition of creative - creativity is only a small part of innovation. I encourage innovation and innovative thoughts/ideas/actions /resolutions to issues. Innovation stems from interdis. investigations. (17/6/2011 9:14 AM)
- For every project that I deliver, students must use an interdisciplinary approach. So, I wouldn't be able to compare to a non-interdisciplinary approach. Speaking hypothetically, I don't see why someone would be more

creative when in an interdisciplinary environment. I don't use interdisciplinary methods to make my students more creative, I use them because it gives them the best tools to approach/solve a problem. It makes them more effective designers but doesn't necessarily make them more creative or innovative. (16/6/2011 4:42 PM)

- Yes. If they are predisposed to exchanging ideas and considering varying perspectives, they benefit from learning that they can identify the real problem and solve it in a focused, meaningful and creative way. They also uncover some key insights that they could not have done alone. (16/6/2011 12:07 AM)
- In some respect yes. Creative thinking doesn't necessarily go hand in hand with interdisciplinary projects but, because they challenge complex thinking it can develop more critical thinking skills, which usually lead to more relevant and informed decisions, resulting in better communication. (16/6/2011 11:15 AM)
- I would not be able to hazard a guess. (15/6/2011 12:02 AM)
- yes, because they have to think outside of expected models of process and production. Happy accidents and discoveries occur through looking at their projects through multiple scales and with different filters that would not occur otherwise. (14/6/2011 12:31 AM)
- Not necessarily. Creativity is dependent on the individual and creatives tend to apply it to whatever task they are provided. (13/6/2011 10:29 PM)
- I'm not sure if this falls into your definition of interdisciplinary, but here is my experience. My area of teaching is graphic design, but one program I teach for is primarily focused on the technical side of web and multi-media design. In this program I have recently encouraged students to use one of the major projects I assign as a joint project with another class of their choice that focuses on teaching specific computer programs and tools. My observation has been that a small number of students have been able to go far beyond what I expected them to be able to achieve (and I suspect beyond what they have expected to be able to achieve), because they've had the support to simultaneously develop ideas and execute them. For example, instead of just designing a poster, a student may decide to do a simple animation, and then find that through the technical skills they apply they open up new possibilities in the design end, so that the final result is something different from what they originally envisioned. (13/6/2011 5:58 PM)
- More stimulated, interested, better research skills, develops autonomy. (13/6/2011 4:04 PM)
- Yes, there are more options available and broader range of experience to draw from. (13/6/2011 12:10 AM)
- I think students are generally more creative in a collaborative environment whether that is interdisciplinary or not. Bringing in different influences only furthers different points of view and different catalysts for idea generation. Certainly, influences from outside the Visual communications realm would bring in a completely different set of ideas and viewpoints so I don't view it as a bad thing. (13/6/2011 10:35 AM)
- Yes - it allows them to integrate, challenge, and extend their existing skill sets and theoretical approaches to design (13/6/2011 9:40 AM)
- No. Interdisciplinarity is not related to creativity. Creativity is method and skill. Interdisciplinary material is content manipulated by that skill. (13/6/2011 9:06 AM)
- I have found that students think more "outside the box" when they are not "designing", or concentrating too much on the visual outcome. When involving other disciplines students learn to think about the problem from different perspectives. (13/6/2011 8:54 AM)
- Not necessarily; it really depends on the parameters of the brief. I do believe that interdisciplinary approaches can foster creativity. (13/6/2011 8:08 AM)
- No. Creativity is not subject to interdisciplinarity, although innovation may be. Interdisciplinarity may be naturally contributing to the required re–framing which is required for creativity, and thus your concept of "more creative " arises. (12/6/2011 9:59 PM)
- Not necessarily more creative, but they often arrive at solutions they wouldn't necessarily have arrived at on their own, or from only using a discipline-specific approach. (12/6/2011 4:21 PM)
- Yes, they use different approaches and methods, which prepares them for future challenges. (8/6/2011 10:27 AM)
- Work on interdisciplinary projects forces students to acknowledge priorities - creative as much as technical or budgetary - arising from other parts of the production process and other nodes in a production network. This inspires the improvisation that is at the heart of real world design challenges. (8/6/2011 9:01 AM)
- Yes. Students are encouraged to seek inspiration from areas not necessarily related to course taught. Those who

do often have better results. (7/6/2011 7:10 PM)

- First of all, I am not sure how you define interdisciplinary–I use the term to mean drawing upon influences from other disciplines. I see this as one of a number of successful approaches to creativity. (6/6/2011 9:48 PM)
- In general I would say, yes, creativity may be enhanced through interdisciplinary work. However, the term creativity is loaded with multiple meanings and potential ambiguity. So, I would add that by creativity, I mean an improvement in the projective competence, generative capacity and novelty at the front end of the design process. (6/6/2011 2:42 PM)
- Depends on ones definition of creative! It appears to be more engaging but even that depends on how a project is structured. IDiscp. projects draw on a range of skills, beliefs and perspective and provides a forum for exploration. Assessment? Difficult: needs clear definition of outcomes. (6/6/2011 12:37 AM)
- If the projects are geared to their age group and lifestyle. (6/6/2011 12:11 AM)
- I believe they create differently and develop deeper insights. I wouldn't say they are more creative but the work is enhanced, deeper, richer. (6/6/2011 10:36 AM)
- Interdisciplinary projects generally require creative cooperation of all the group members to meet the needs of a broader context. (6/6/2011 9:56 AM)
- Not necessarily, but I think it challenges them to think and then apply new solutions to a varying set of criteria. This can lead to creative solutions. (5/6/2011 7:13 PM)
- Absolutely. It requires more input and effort at first, but significantly broadens their understanding of and approach to the posed design problem. (3/6/2011 8:09 PM)
- Only if they feel comfortable technically with the mediums they are using, otherwise i find the unfamiliar inhibiting to them causeing them to go back to default. (2/6/2011 1:06 PM)
- It depends on the student. Some students engage well, but others retreat from unfamiliar interests and paradigms. (1/6/2011 12:59 AM)
- Yes, simply because they break out of the expected and are forced to see things from any different viewpoints. (30/5/2011 1:23 PM)
- Their creativity is more focused because it is strategy based and not just formal window dressing. This makes them think about and draw influences from many aspects they would miss without doing the research. (27/5/2011 3:13 PM)
- quantifying creativity is problematic. its not the task but the approach tht defines creativity. (26/5/2011 6:37 PM)
- Not necessarily- such activities may be too pragmatic (solve a problem in a practical way) and feel limited by the scope and utility. Creativity has more to do with built-in parameters like openness, or freedom to explore a theme or idea. (26/5/2011 2:26 PM)
- No, there is to much reliance upon the tool or the digital look. In an Intermediate Photoshop class, talking more about paintings and layering process produced far better images. Basic art concepts and process lay the foundation for the digital works (26/5/2011 11:44 AM)
- Yes. Allowed to broaden their focus to all areas of expertise and interest; encouraged to be less constricted in terms of design strategies and relevant research/methodologies/approaches to mindful design (25/5/2011 11:27 AM)
- Yes they always are. As soon as they are off the computer—for example—they become unfrozen. It's like the idea of suddenly having parameters frees them up. Imposed limits always get them moving, because there are suddenly things they can't do, whereas computers boggle them because there's almost nothing they can't do. (25/5/2011 9:59 AM)
- Yes. They often move beyond their learned methods of creating new ideas. (24/5/2011 4:37 PM)
- It is dependent on the student and the project I find the question too general. (24/5/2011 2:05 PM)
- I think, as Mamoru Oshii would say, overspecialization breeds in weakness. And it would be foolish to leave school thinking that your can confine yourself to one sphere of knowledge, turtle up, and still function well with other creatives. (24/5/2011 11:39 AM)
- That's hard to say. I think that having the interdisciplinary projects around encourages students to be more creative in general, but I'm not convinced that they are "more creative" while working on those specific projects. (24/5/2011 10:33 AM)
- Quite possibly. Perhaps more resourceful, expressive, etc. (24/5/2011 8:50 AM)

- yes... the opportunity provides the students with the challenge of looking at a design problem from several viewpoints and also provides multiple opportunities to succeed based upon student strengths (24/5/2011 7:39 AM)
- They are exposed to different points of view, different approach and explore several design possibilities (23/5/2011 1:33 PM)
- yes, gets them out of imitation (23/5/2011 6:41 AM)
- absolutely! (23/5/2011 12:50 AM)
- Generally my students do not work on interdisciplinary projects so I cannot address this question with any authority. (22/5/2011 9:58 PM)
- Approaching a project with a process incorporating interdisciplinary research and visual experimentation can offer more avenues for students to find personal engagement with the project, inserting more of their own experiences and interests. This engagement often seems to result in enhanced creativity. (22/5/2011 7:34 PM)
- Plus créatif et plus motivé grâce à la déstabilisation que l'interdisciplinarité apporte dans un projet. En effet, souvent l'étudiant a tendance à rester dans sa zone de confort en ne développant que des projets dans une discipline connue ou maîtrisée. Le fait d'imposer l'interdisciplinarité, le force à découvrir d'autres univers et à les fusionner, ce qui développe l'unicité, l'originalité dans les projets étudiants. (22/5/2011 7:31 PM)
- Yes. It gives them a richer context for creative work. Provides more opportunities for creative decisions. (22/5/2011 9:22 AM)
- Yes, it forces them to think and work beyond their skill set and accept challenge, risk and learning as part of the design process. (21/5/2011 10:45 PM)
- Students are creative if the nature of the project requires creativity. The more "wicked" the problem, the more varied the processes required to address the issue. A traditional "mannerist" graphic design education has no place in the teaching of concept development, and does not serve the current needs of Canadian industry or society. (21/5/2011 6:59 PM)
- can't compare - I teach interaction design, and haven't taught design itself. (21/5/2011 1:17 PM)
- Yes. Students seem to work in a more experimental fashion when working on interdisciplinary projects. They are able to focus their work in a more conceptual way.. allowing form to follow idea rather than vice versa. (19/5/2011 3:54 PM)
- Not necessarily more creative but certainly more thoughtful. Young students think very narrowly. Putting them in touch with other disciplines broadens their awareness and understanding (and perhaps the breadth of creative options). (19/5/2011 3:09 PM)
- I have no clear evidence, but yes I think so (19/5/2011 2:02 PM)
- Yes, strongly. Because we encourage our students to actively engage in broad critical and contextual thinking and problem solving, ongoing anecdotal evidence suggests that 'interdisciplinarity' best supports that engagement. (19/5/2011 1:46 PM)
- An interdisciplinary approach seems to circumvent preconceived notions of a solution to a creative problem. (19/5/2011 1:18 PM)
- Yes. If you think about it, all projects are interdisciplinary. (19/5/2011 11:28 AM)
- Yes, because outcomes and media are not predetermined, they need to focus on the problem itself before they can generate solutions. (19/5/2011 9:03 AM)
- The most interesting results often happen when someone goes outside of their chosen field. They can see solutions to problems that those within the field pass-by everyday without even noticing. Take Alfred Weger, an astronomer who looked at geology and theorized plate tectonics. (19/5/2011 8:30 AM)
- Depends how you define creativity. For example, one student's solution to a coding program could be extremely creative, while another's solution to an interdisc. project could be mundane. I think factors such as individual differences, group dynamics (for team work), classroom climate, previous experience, tools at hand and well as the nature of the problem all contribute ... not just interdisc. or not. (17/5/2011 9:26 AM)
- Your question needs a baseline. More creative than "when"? Sleeping? Working alone? Listening to a lecture? In general, I cannot comment on students' creativity. That is internal state and beyond sight. I can comment on the outcome of student work. This is complex and many more variables than interdisciplinarity are involved. (17/5/2011 7:50 AM)
- Yes, their training makes it so that they think creatively. (17/5/2011 7:22 AM)

6) Based on your experience, what are the advantages and disadvantages of using an interdisciplinary approach in the classroom? Explain.

- Students are geared towards employment requirements and are not aware of the importance of critical thinking skills. (27/4/2012 8:35 PM)
- Advantages – ideas executed in a more professional manner; instill in students the understanding of responsibilities within a work team or with clients; students learn physically rather than just theoretically; professional networking Disadvantages – time constraints; different goals between departments may mean that, although desired, may not be right fit (18/4/2012 9:41 AM)
- it promotes broader ideas and is more "real world" but makes it more difficult to communicate and specialize (13/4/2012 5:26 PM)
- Varied content for assignments and projects allows students to widen there perspective on potential work areas. Engaging with external clients (often former students) is motivating for students. Mixed backgrounds for faculty also contributes as they are more willing to team on courses or between courses. Disadvantages Wider experiences required by faculty. Clear definition of roles needed. Inquiry based teaching means more uncertainty in projects. Faculty must communicate about courses and prerequisites. (14/12/2011 3:54 PM)
- Advantage - often times student's find a new voice or interest. Disadvantage - students often find themselves struggling due to lack of acumen in a field that is not their own. (14/12/2011 12:42 AM)
- Designs students are often unconvincing or disinterested in interdisciplinary approach. My experience is that the projects are more difficult to explain and this causes student resistance to the approach. However, once a positive result is achieved through these methods a wider classroom appreciation for the method leads to a more fruit bearing educational experience. (31/10/2011 6:26 AM)
- Interdisciplinary approaches often take more effort and time due to the prep work and engaging others (in my experience), but the results are always worth it. (28/8/2011 5:32 PM)
- Advantage: Stimulates exchange, reveal strength of individual who can share with classmates — Disadvantage: Material and budget constraints. Many can loose the focus (7/7/2011 6:49 PM)
- Advantages: It moves design solutions beyond style and aesthetics into areas that allow for testing and establishment of validity. (6/7/2011 10:50 AM)
- Negatives: Students can easily feel overwhelmed or intimidated by processes unfamiliar to them. Not all students can freely break away from a reliance on the methods they've used for learning previously. And some students seemingly are satisfied in only learning the technical side of design – that is, treating it as a trade. These students won't usually see the benefits of an interdisciplinary approach. On the positive side, this approach gives students permission to try things differently. Consequently, it also exposes them to a wider world of opportunities – both in terms of concepts and applications, but also in terms of employability. They are more inclined to see design's strategic side and the greater roles it can play in the world at large. And it increases their vocabulary; design-wise, but also in relation to other industries. This in turn leads to the erasure of defining lines between who's role is what when you can try anything! (4/7/2011 8:06 AM)
- Pro - design students learn to understand how design fits into a larger system of economy, not just design for design sake Con - very difficult to coordinate and manage (23/6/2011 8:54 AM)
- Fosters respect. Broadens perspective. Gives better context in that they know the various moving pieces in a production environment. (21/6/2011 11:36 PM)
- Involving real clients in the classroom experience can be tricky as it can take the focus off the intended lesson and onto the dance of responding to the client's unique needs. Therefore, involving real clients needs to be done in a course where the students are experienced enough to be able to respond in a variety of ways, and the 'dance' itself is considered to be part of the learning experience. (20/6/2011 9:30 AM)
- Challenges assumptions, requires melding of (previously thought of) separate disciplines, require relinquishing control (and embracing experience and contribution of others in differing fields) of every aspect of the design direction (17/6/2011 9:14 AM)
- As I mentioned above, since design is by its nature a discipline that must bridge art and science, it follows that a designer must understand the art and science of the artefact they are making. If one believes in this notion of design, then it follows that an interdisciplinary approach is always advantageous for the design student. This view is not new. Almost 100 years ago Walter Gropius argued that students at his Bauhaus school learn both

artistic and technical aspects of making. (16/6/2011 4:42 PM)

- The most successful results and learning experience starts with the instructor identifying the key skill sets and particular disciplines of each of the students, and creating teams that complement and challenge them optimally. Diverse cultural backgrounds also contribute to interesting directions. Depending on the class dynamics, it may take a longer time to achieve focused results. Helping the students recognize their creative potential is also crucial to participation. Depending on the student, they may not enjoy team activities, and prefer to work alone. There is not often the time to motivate each and everyone effectively. (16/6/2011 12:07 AM)
- Designers are form builders. Problem sets we are often given revolve around different and separate communication vehicles. Each design discipline in itself is valuable, but it is important to any designer how certain other disciplines function in order to inform their own work. (16/6/2011 11:15 AM)
- A richness is brought to the design research and creation processes that does not necessarily exist otherwise. Students are introduced to subjects, methods and people they would not normally come in to contact with. The expertise of people working in other areas enriches the students' learning experiences. (15/6/2011 12:02 AM)
- Advantage : prepares students for a wide range of problem solving and opens the door to unconventional and creative thinking. Also allows for increased skills in collaboration and communication. Disadvantage: instructors need to be knowledgeable in many areas and keep up with current advances across many fields - very time consuming (14/6/2011 12:31 AM)
- It reflects real world practices and prepares students for the disparate challenges they will face when leaving the education system. Unfortunately, many students are quite resistant to interdisciplinarity and prefer to focus on one specialty, limiting both their capacity to learn and their value as a designer. (13/6/2011 10:29 PM)
- On the whole I think that interdisciplinary learning has great potential but is affected by a number of conditions and may be more effective for some students than others. Advantages: Ideally interdisciplinary activity creates a feedback loop that stimulates creativity and gets students thinking outside the box of their expectations. Disadvantages: In the short, intense programs I teach in, which have classes covering a very wide range of subjects in a short time, it's very difficult to set up any kind of interdisciplinary activity and/or fully explore its potential because of pressures on time and the sheer volume of information they have to take in; if students need more time to explore and experiment they may actually be discouraged by not having enough time to do so at the speed at which they need to do so. I can also imagine that there is a potential danger of dilution of understanding core concepts when the focus of learning activities is not clearly focused. (13/6/2011 5:58 PM)
- No disadvantages (13/6/2011 4:04 PM)
- I think a certain degree of interdisciplinary approaches certainly helps students move beyond the confines of how we would normally approach a project (traditional/online to more non-traditional or perhaps guerilla) and I don't necessarily view it as a bad thing. I think if anything, too much interdisciplinary could dilute the core foundations of a design program depending on what the interdisciplinary involvement is. Ultimately, in my experience it all falls back to a time issue. In my program, we don't have enough time to cover off everything we want to with our students so we make some hard choices in order to cover what we feel is the most beneficial for our students so that when they graduate they have a strong foundation that allows them to excel when they get out in the real world. (13/6/2011 10:35 AM)
- Advantages - it allows the field to grow and extend the usefulness of design thinking into new areas Disadvantages - depending on the disciplinary thought, it can sometimes be satisfied with a superficial understanding (13/6/2011 9:40 AM)
- Advantages is that the somewhat random choice of material is more likely to catch the interest of "outlying" students with unconventional interests. Disadvantages are that the resulting approach may seem disorganized; or confuse a main-stream focused student. (13/6/2011 9:06 AM)
- Advantages: introduces new perspectives; expands notions of what visual communication is and can be; encourages students to challenge their pre-conceived notions of what they are learning or should be learning Disadvantages: Sometimes students may have difficulty making connections between other disciplines and their practice; the logistics of an interdisciplinary project can be challenging due to availability of people (faculty and students) outside of your own department. It can be tough to maintain consistency of contact and interaction over a whole academic term. (13/6/2011 8:08 AM)
- Interdisciplinarity contributes by: a) helping to define what designing is and is not, exactly b) providing content. c)

by contributing strangeness, d) by contributing, from the way you seem to have set up this broad notion, to the necessary collaboration with otherness that permits designing to take place. (12/6/2011 9:59 PM)

- Advantages as stated above in questions 3 and 5. Disadvantages can be that initially, students in each discipline sometimes have difficulty relating to/understanding the approach of students in another discipline; this can frustrate students at first. (12/6/2011 4:21 PM)
- Students learn to think more, from multiple points of view (8/6/2011 10:27 AM)
- The main "disadvantage" is the challenge of convincing students they need to consider more than a strictly bounded instruction in a specific technical skill in a particular course but to think instead how these technical skills will be embedded in a broader design process. (8/6/2011 9:01 AM)
- There can be an issue of students not being focused or side tracked. (7/6/2011 7:10 PM)
- advantage=see #3 disadvantages= not drilling down deep enough in one area, not specializing enough or getting enough focus in one area (6/6/2011 9:48 PM)
- Advantages include the potential to take the design student into unexpected areas, and to operate outside standard, formulaic modes of thought. There is also the potential to learn new methods and cultural approaches (every discipline is a different culture). I can't think of any disadvantages as long as the core curriculum remains focused on design as opposed to a form of interdisciplinary studies. (6/6/2011 2:42 PM)
- Advan. • broad opportunities to engage students with a variety of 'learning styles'. • may be more 'relevant' to learners interests • potential for meaningful, personal work DISadv. • unwieldy! A challenge to structure and manage • requires instructor to be fluent in a broad range of skill sets • assessment can be difficult • may not get 'buy in' from students – may appear quite 'radical' from anything they've experienced • colleagues may also question the value of this approach. At odds with prevailing (and antiquated, in my opinion) teaching strategies which have been in place for decades. • may not be supported by the institution • the Mighty Portfolio: how will a project like this translate (in a tidy form) into a students portfolio? (6/6/2011 12:37 AM)
- Again, my idea of interdisciplinary approach could be inaccurate but I don't see how you could teach creative thinking, problem solving and idea generation without using tools and approaches outside of the design principles and elements. They have to see everything as creativity and design, man made and otherwise. (6/6/2011 12:11 AM)
- One must not lose sight of the important disciplinary knowledge which must be learned, so that students develop deep skills in their discipline of choice and will have the skills to practice upon graduation. However the breadth that interdisciplinary learning brings, means that students learn not only contextual knowledge and skills, but also learn important collaborative skills with students or professionals in other disciplines - an important part of any design practice. (6/6/2011 10:36 AM)
- Advantages - student centered learning outcomes; individuals have to pool intellectual and physical skills in order to solve multi-layered problems. (6/6/2011 9:56 AM)
- advantages: 1. promotes diversity of creative thought and originality of design solutions 2. increases understanding about the subjects being cross-disciplinarily introduced 3. encourages students to approach a subject from multiple angles disadvantages: 1. more time consuming than regular (linear/singular) approach, since it requires a time investment to understand the other discipline as well as react to multiple situations rather than to one 2. requires instructors to be specially trained, so as to be able to understand and introduce other disciplines = expensive, not yet commonly practiced, time consuming 3. requires instructors and departments to communicate constantly between each other, so as to stay on top of recent developments in their fields as well as the communal progress of such an educational approach (3/6/2011 8:09 PM)
- It prepares them for when they are practising designers/artist. Since most of are students come to us now wanting to go in many different directions with their diploma (industrial design, graphic, Arts Degree, Crafts, illustrators, web design etc.) we have to be prepared to help them get there. (2/6/2011 1:06 PM)
- I have little experience; interdisciplinary approach usually takes place in projects outside the classroom. The advantages are a wider view and the possibility of seeing in new ways and understanding other points of view. The disadvantage is that it takes more management of individual students, and not all students are equally capable of engaging in it. Ironically, students who do well in design classes generally may find interdisciplinary approach more frustrating that more average students (1/6/2011 12:59 AM)
- Some students find this difficult. Some learning styles thrive with this approach, others find more comfort in

more linear approaches. (30/5/2011 1:23 PM)

- For upper level students it is essential. For first and second year it might be too much too soon. (27/5/2011 3:13 PM)
- Spread too thin expertise becomes ineptness without breadth specialists are prone to absurd conclusions (26/5/2011 6:37 PM)
- Students don't get needed skills- they find someone else, for example, to do the programming, so they don't become programmers themselves. (26/5/2011 2:26 PM)
- Advantage — Engagement Disadvantage — to quick to find a solution (26/5/2011 11:44 AM)
- advantages: more inclusive, encourages creativity and empowerment to embrace all expertise and interests disadvantages: intimidating to students who don't habitually think out of the box (25/5/2011 11:27 AM)
- Advantages are huge and listed in answer 5. Disadvantages are much more time spent course planning, getting the students to buy materials, and fitting in the interdisciplinary work with enough regular "graphic design" education. (25/5/2011 9:59 AM)
- Disadvantage - students may become involved with certain topics/disciplines which they have limited understanding or background with. Advantages - students who realize their limitations potentially embrace this for further exploration. (24/5/2011 4:37 PM)
- Have not taught using an interdisciplinary approach. (24/5/2011 2:05 PM)
- I can't really say. I'd imagine the benefit would be that you'd be more well-rounded. I think multidisciplinary designers definitely have an edge in the market. The downside is that you don't have time to be great at everything, and you worry about students being underprepared when leaving school, or not having that singular marketable skill that will get there foot in the door. (24/5/2011 11:39 AM)
- While this approach is definitely connected to encouraging creativity, it can be difficult to integrate these approaches into traditional classroom setting. It is particularly difficult for students who have a limited sense of what they're "supposed to be learning," in particular in the first and second years of their degrees. Once they have seen the results, though, it is easier to get them to buy in to this approach. (24/5/2011 10:33 AM)
- There are many but this question is difficult to answer because it is so broad. (24/5/2011 8:50 AM)
- As listed above... a student with weakeness in one area of design are able to succeed based upon strengths in other areas. Graduates from the program have a broader range of experience making them more capable of finding employment. An interdisciplinary approach provides more opportunity for students to practice rationalizing design approaches taken. They need to justify and support their decision making. This separates good designers from those who make nice images. (24/5/2011 7:39 AM)
- The advantages are more exposure and different approach. Disadvantage, not enough time to work in-depth on interdisciplinary project (23/5/2011 1:33 PM)
- arts are symbol languages, and we speak different/many languages (23/5/2011 6:41 AM)
- It broadens up the way students approach the problem. (23/5/2011 12:50 AM)
- Generally my students do not work on interdisciplinary projects so I cannot address this question with any authority. (22/5/2011 9:58 PM)
- Advantages include fostering an inclusive learning environment which gives students increased opportunities to participate and contribute to the collective knowledge of the group. Disadvantages might include more potential for projects to become unfocused or students to feel overwhelmed by information and possible design directions. (22/5/2011 7:34 PM)
- S'éloigner de la spécialisation qui ne sert qu'à former des petits robots capable de ne faire qu'un seul truc à la fois. L'interdisciplinarité stimule les angles d'approche, la curiosité, les connaissances, la façon d'aborder les projets, etc. Les étudiants sont plus motivés dans l'élaboration de leur projets. (22/5/2011 7:31 PM)
- Disadvantage: requires broad instructor knowledge and experience. Advantage: gives students a broader educational experience, rather than self-contained training. Advantage: encourages original thought and novel solutions rather than repeating stereotypical processes. (22/5/2011 9:22 AM)
- Students that are linear thinkers are in for a bit of a shock! Many students have difficulty seeing the connections and they struggle to find a design solution. However, the effort is worth it. It is better to be lost than found because when you are lost, you are looking. (21/5/2011 10:45 PM)
- Professional design activities do not take place in a silo, or vacuum, they're interdisciplinary by nature. If

communication designers are not well versed in the employment of interdisciplinary and multidisciplinary approaches and methodologies they are more likely to fail their clients' objectives and users needs. (21/5/2011 6:59 PM)

- Advantages: offers students a more experimental, creative approach to design that is less rigid and encourages conceptual investment in projects. Disadvantages: supplies and skill level with various mediums. (19/5/2011 3:54 PM)
- Disadvantages: difficult to fit into existing curriculum, clients are problematic, don't want to do spec work for commercial initiatives, group work can be difficult for varying personalities. Advantages: Putting them in touch with other disciplines broadens their awareness and understanding; promotes research, investigation and lateral thinking; helps them understand the context and application for design problem-solving. (19/5/2011 3:09 PM)
- Advantages are connected to having a holistic approach to the problems and bringing expertise to the design table. Disadvantages are usually connected to logistic and bureaucracy, the difficulty to work cross disciplinary and the tendency of students/academia to think/work in silos. (19/5/2011 2:02 PM)
- Advantages: the key advantage is a 'holistic' approach to creative problem solving. A secondary advantage is the confidence a student develops in meeting the challenge of oftentimes complex, cross or multi-disciplinary problems common with today's clients. Disadvantages: unless a student is going on into a disciplinary degree which embraces interdisciplinary concepts and thinking, the journey can be quite frustrating. (19/5/2011 1:46 PM)
- Again, outside of school, the world functions as cells, or parts of wholes. Permeability between cells, interchange and knowing where you fit in all contributes to an expansive, inclusive and deeper understanding of things. Myopic vision is not a goal of education, it's is expansion and connecting those learned skills be it conceptual, cognitive, production or collaboration needs to be looking in all directions, not just one. (19/5/2011 11:28 AM)
- Advantages as above. Disadvantages, loss of focus on specific job-ready software, interdisc approach not always understood by industry, harder to teach where outcomes vary across disciplines. (19/5/2011 9:03 AM)
- Some students, instructors, and practitioners still seem to have some very narrow mid last century modernist ideas about design, its role in the world, and the range of topics that could/should influence it. It seems to rest on if they see design education as job training or an arts education. (19/5/2011 8:30 AM)
- As above under question 3. This broad level education enables graduates to work in a variety of fields and thrive in interdisc. teams because they have been exposed to all the domains. However, they may or may not lack domain expertise or practical (design) skills – this is largely based on individual motivations and skills (ie whether they've deepen some skill areas on their own or through other experiences). (17/5/2011 9:26 AM)
- You need to ask your respondents to describe what interdisciplinarity means to them. Else you will get answers framed in a wide variety of ways and won't have the needed grounding frames for those explanations. Your question cannot really be answered in a sentence or two. It would take a considerable paper. (17/5/2011 7:50 AM)
- The advantages are a broader perspective when creating something. The disadvantages are that students steer towards the perspective that is most known by them rather than taking a more holistic view. It is also difficult to incorporate multiple perspectives in a design. (17/5/2011 7:22 AM)

Appendix 4.2 [A]
Interview Questions

Introduction

This research study examines possibilities for visual communication design education to move further beyond its traditional and historic studio based curriculum. In particular, it focuses on the use of an interdisciplinary approach in the design classroom to promote creativity. For the purpose of this research, an interdisciplinary approach is defined as a curriculum structure in which faculty integrates information, techniques, concepts, and theories from various disciplines to advance students' capacity to understand issues and propose new solutions that extend beyond the scope of traditional visual communication design studies.* For the purpose of this study the interdisciplinary approach refers to involving disciplines outside of visual communication design programs, including other areas, disciplines, professions and real clients, to participate in the design process. I will ask you a few general questions that will help to define the importance, methods, advantages, and disadvantages of the interdisciplinary approach and its links to creativity.

* *Diana Rhoten, "Interdisciplinary Education at Liberal Arts Institutions," Teagle Foundation White Paper (2006), http://www.pkal.org/documents/IDEducationAtLiberalArtsInstitutionsRhoten.cfm.*

Interview Questions

1. **If you have taught in more than one institution that involves an interdisciplinary approach in the design classroom, would you say that an interdisciplinary teaching method varies from one school to another? How?**

2. **How do you generally promote creativity in your classroom? Do you employ different methods while working on either small or large-scale projects? Do you have main techniques?**

3. **Do you think students' level of creativity varies depending on the nature of a project; for example, students are less creative if the project has specific constrains? Do you believe that students have the same potential level of creativity for any given design project?**

4. **Do you incorporate an interdisciplinary approach in the classes you teach? If so could you please provide a few examples.**

5. **Can you describe a recent in-class design project of an interdisciplinary nature that was successful? Were there any challenges? If so, what were they?**

Appendix 4.2 [B]
Full Interviews

4.2.1 INTERVIEW 1

Design Professional, Educator
Schools Presented at the Interview:
George Brown College (Toronto), Ryerson University (Toronto), University of Toronto, Academy of Eindhoven (Netherlands)

How an interdisciplinary approach differs from school to school?
"First time I ever taught was at George Brown College, graphic design program, I taught materials and technology to young students and I was not coming from graphic design background at all. I studied interior design; so I actually taught them from a design perspective and taught them to think 3-dimensionally, think about communication, in 3D. So, actually, that was an example of an interdisciplinary method in a sense that I was not connected to anything else outside, except for the course I was teaching. So, I did not experience an interdisciplinary among other disciplines within that school. I was strictly teaching that class and there was no contact with anyone else."

Have you use any projects or did you design any projects yourself that involved other disciplines? Have you designed a course or have you followed the pre-designed outline?
"Yes, that one I did. But there were rough guidelines, but I pretty much had a lot of freedom at that course at George Brown. I took a non-interdisciplinary approach. I was not coming from a particular discipline. The first assignment they [students] had to create – observe of communication in the city. They had to do photo-essay – photographing communication in space in the city. And then, I had them to do a communication project for theatre, for a movie theatre, cinema in Toronto, which was a very hidden cinema that had a strange entree through the alleyway. So, I treated it as a communication problem because there is a lot of traffic – drive-by and walking traffic on that street, but the theatre was really hidden in the alley."

"It was years ago. I mean, the lesson learned is that course is that I was coming as an interior designer that is why I was asking them three-dimensional, even architectural questions, or spatial questions because they were as graphic designers been asked... my task was to teach them materials and technology."

"And I just taught a course. It went very well. I really enjoyed it. The students really enjoyed it because it brought a totally different perspective, different approach. Another assignment they did later on, is that they had to take a lighter and make it out of material technology. George Brown does not have a workshop, but they... so the students improvised. They had to. They had many people help, they worked on workshop at their parents' or they worked in a low-tech way."

"And so I just brought my knowledge and tried to see the connection. So really, it was design methodology through observation. In the theatre project it was about how to communicate in general. It was not based on technology, it was not based on graphics, it was based on getting people to go to the theatre. And then, at the end they had to materialize it, but not for real, but theoretically. So, I was pretty naïve coming into there with this direction, but it worked. It was fresh. And I think students were enthusiastic."

"Second course I taught was materials and technology at interior design at the school I have graduated from. And that course is much more specific like it has both a theoretical component and a workshop component, where you actually play with the materials. For example, I had to teach on the subject of paint for three hours. As a student, it was my least favourite class and what I did, I tried to bring in more newer technology and even also a little bit more

conceptual aspect behind materials, so bringing that content. There was a strict course outline that I had to follow. I think it was pretty boring. And I taught together with and architect, and we would alternate. Sometimes we worked together. So that was two disciplines. Architect having a specific architectural training..."

"My third teaching experience I was accredited with any from University of Toronto, Architecture Department, but just being an outside expert. It was never architectural projects [I worked on], but it was more product-related. But I was not coming from product design at that time yet. But I have met Brand Courdinale, he was the teacher at the university of Toronto at that time. Because we both won a chair award, he did his chair for Kellthover, and I did mine for Ryerson University. And we met each other at awarding and from then on, he would invite me to the critique sessions at the UofT for furniture, for the furniture course he was teaching. And I was coming from an interior design background. Its is a process of analysis looking at design as a process of analysis that enables somebody to step in from a different disciplines and still read the projects and comment on them."

"And then came the last teaching... Oh I think, like two years ago I was the Masters coordinator at the Academy of Eindhoven. So I was working closely with the head who is a co-founder of [...]. I was a mentor for students, I was a link between all students and mentors and I involved also in their thesis projects."

"Let me tell you about Design Academy... when I was studying there. I mean, it is called IIM, and there are three disciplines. But they are really... but really its pretty much product design. But they don't teach you how to design a product. The do not teach you very much at all. It is more about you as students entering the process if partially, self-discovery, and partially discovery of your role as a designer in the world. So, in relation what is going on in the world, where are you coming from culturally, and what culture you are operating within. So it's a broad approach and at the end a lot of people had products, but my thesis project, which was "Made in Transit". It was very interdisciplinary. I made [it is] a new supply-chain concept. So here I am as a designer proposing, stepping into an industrial design thing, which is the design of supply chains, world of supply chains, which is design, has evolved on many different levels there. At the end, I also designed packaging [for example] communications for it. But that's is not where I see the value of the design... The idea of "Made in Transit" which is... can time and space be used in productive ways in transport? Can something happen, can production happen on the way? Can something grow on the way? And I showed that with mushrooms by growing a package on the way to supermarket. So, in developing of this project I worked with scientists, like marsh room engineers, mushroom growers, mushroom scientists, packaging industry people, transport people. And when I accessed Agriculture University of the Netherlands because I was talking to a control engineer to a different department, and when I had them all in one room, they were really excited and it was an interdisciplinary project. To me, it was really funny because here are all those scientists sitting in one room. And I am like, yep, you guys one discipline, but they consider themselves each from a various distinct disciplines; like the mushroom grower, and the mushroom scientist and motor-coach, supply-chain guy. They never talked before. [Right?] They are all in different buildings. So even though, they are all from agriculture and science, but they all have their core specialties. So, they projects did show the role of a designer coming from up with an idea which has implications of different disciplines. It tells transport companies, "Hey, this is worth investing in". It tells mushroom growers, "Maybe we need to think of a different way of growing mushrooms". Perhaps. Packaging companies, the role of packaging companies has changed, so it had systematic implications."

Is the process more important than a final outcome, especially in this project?
"No, I do not think so, I mean the process can have value in a sense that you can learn something, and you can discover something. And you can enjoy along the way [you know]. You can also enjoy or not enjoy the process. That is the value of the process. But at the end you do have process to discover something and to learn something. So, I know what you mean. The process is important, but for example, [some products are... part of...] if you see the package with the mushrooms growing in it, you have to understand that those mushrooms grew on the way. But that is not a design process; that is a production process for the supply chain. So, I re-designed a process, but it does not mean my design process was more important. I think the design of a process was more important. [If you know what I mean. There are different levels here. There is a...] What I went through as a designer in my own design process and I designed a process because of the supply chain. And at the end there was a product, which is mushrooms, growing in a package. And at the end the most important of those three is a design of a process.

But I think the education needs to emphasize the design process. A different design process can give different design outcomes. [So only in... So,] that is the only reason I would say, you know, focus on the process because a good process of analysis, observation – that is what would give you good outcomes."

Do you think students are generally more creative or less creative while working on the projects that have a too many constrains? Could it be problematic to have too much freedom in the projects?
"I think there is no correct answer to that question because sometimes you have really strict restrictions and you have to be clever. There is no such thing as being more creative [in a more...] No matter what your question is – how broad or how narrow – it does not change your ability to be creative. You can be as just creative with a narrow question as you can be with a broad question. [I think people from different disciplines, like a...] Exposure to different disciplines can give you perhaps unexpected insights or different perspective, which can influence you as a designer in a different way. So, design is not narrow, design does not repeat itself. It needs to look at other things that going in the world beside itself. And its a big problem in the world of design. It is very circular. Yeah..."

Do you think an interdisciplinary approach promotes more creativity than "fictional projects" approach?
"I think it is the same answer. [Its about... nothing can influence.] Nothing makes you more or less creative, [there are...]" You can be in any situation. Someone can be more or less creative. And creativity is putting things together in a new way. [Right?] Making unexpected connections. So, no matter what, if it is within a fictional or real problem, you can do it in a better or worse way. More or less. So, I think you should re-frame, rephrase your question – the more creativity through intersiciplinarity..."

"Maybe it changes the influence on your ideas because you have different way of thinking. But it does not mean its more creative. It is just more unexpected, perhaps."

"I guess in reaction to what I have pretty much said, its about how world is circular, how design world is often repeating itself, which really relates to the initiative at Droog, Droog Lab. The series of projects we do there, is we... it fits in different places in the world to learn something. So, we are looking at society, we are not looking at the design world. Looking outside of the world of design, stepping into a real world. We are looking at communities: different people, in different context, at different places. We see how they are living and see what we can learn from that as design profession. And how we can create outcome inspired by people and different way of living around the world. So, we are not going thee to solve their problems, but we are going there to learn from them to inspire the nature of design. So, if it's a way of changing our influences as the designers by looking outside of ourselves as designers. And we work with interdisciplinary teams to do this. Working together: graphic designers, and product designers, architects. So we are like... we take it a s given; like for us it is very obvious to work with different disciplines. I its so normal. Because we are always looking at what is more important. Because for us its more about a theme than a discipline. But it does not always... if the client has a specific question in mind, can you design this book for us. It is a graphic design problem. Often, graphic design – is the best thing [solution]."

"Well, when I studied interior design at Ryerson four years, I also found it. Well, we did have some workshops where we got to design [lamps] and make lamps, we had to make chairs for example. And those were my favourite courses because it where you can... where you are learning the trade, where you design, make things. So that is why I went to this direction. So after I graduated and I worked in the field of interior design and I did find it narrow and I also projected a typical path what you are expected to take. Like you are expected to work in interior design company, do your seven years, log your hours, take your test, get your license, practice, take your courses on the side, get certified. Like all these steps, and I do not know if it is my personality or if its... but I rebelled. I rejected it. That's why I did not become interior designer. Not because I do not love interior design, but because I rejected professional path that you are supposed to go. [You know,] but there are other things in this world."

"There is a big trend for not specializing and opening up boundaries, but I think at the end you must focus. I think we come from the era trying to break our boundaries, but at the end we will see the need to specialize, professionalize. Because you realize if you do not narrow it down and focus on something, you do not know anything."

"It is actually when you work on very specific level, but you get the insights of broader value. It is only when you go into something specifically, then you learn something."

4.2.2 INTERVIEW 2

Design Educator
Schools Presented in the Interview: York University-Sheridan College (Toronto), Polytechnic University (Hong Kong)

"My experience as teaching in various institutions, they have different cultures. Teaching really depends on countries and regions. For example, Philippines is unique in that sense, some 20 years ago there was no design program."

"The way I see it is I do not see it as an interdisciplinary teaching, it is teaching that happens naturally. I see it in Asia and Europe, but I do not see it yet in Canada."

How do you promote creativity?
"We need to prepare course outlines that embrace all aspects of creative thinking, research, and exploration. Yes, it is important to know 'hardware, 'software, just know it! As for developing passion, I can only speak for myself, it includes research, travel, and collecting what is important. For example, package design. In order to be successful, one cannot confine to four walls. You need to involve a multidisciplinary method: history of package, production methods, etc. When I travel, I learn from next generation. You need to learn to respect another culture. Respect is important. This is one lecture on culture. I also carry books when I travel. As teachers we must motivate and be credibly knowledgeable.

Do you think students' level of creativity varies on the project?
"No don't think so. Software helps to produce good projects, but cannot turn them into miracle. But it all varies. From my experience as a teacher, it depends on how instructor motivates, especially weak students. I teach them various study methods and they gain confidence. For example, learning discipline successfully, do I use workshop or book? If I use book, is it open or closed? But I teach them to forget about the classroom; it is all the same. Most important is a time management. Some students need more guideline in it."

"Success and guidance through project depends on the instructor, For example, if you are creating project for a federal government, it could be closed or open at the same time. Large portion depends on instructors. Instructors give guidance, same as a client."

"Creativity depends on the individual, like food preferences."

Do you incorporate an interdisciplinary approach in the projects you teach?
"Yes. Package design projects from my students have won 55 international awards. I teach culture, good time management, multidisciplinary packaging, not just confining to graphic design. I teach architecture, even fashion. One of the projects, for example, was a rice bag; it had to have a good type and had to be bilingual. But it is not enough; it also must be sustainable. So, bag becomes an apron. This project won eight awards (by Jennifer Thai)."

Recent example of successful interdisciplinary project.
Pinhole camera project by Linna Xu. She got Adobe award for packaging. I usually encourage my students to go outside their discipline, for example, into industrial, fashion or even architectural design. If they are unable to produce work on their own, they should be able to hire someone. In school projects, students involve their parents

and boyfriends to help. However, family is not on call 24/7, so student must learn to manage their time. For example, another student worked on glass container. And that project required 3 months of work, meaning that student had to manage time well."

"Multidisciplinary projects do not follow specific rules, i.e. going by Bible. Interdsiciplinarity or multidisciplinarity does not mean to teach at the same time, but means being collaborative."

4.2.3 INTERVIEW 3

Architecture, Educator
Schools Presented in the Interview: University of New Brunswick, New Brunswick College of Art and Design, St. Thomas University (Fredericton, New Brunswick)

Could you please briefly introduce yourself.
"I am an architect by profession and this is my main job. But I have been a part-time teacher for 10 years. I have taught Art History and Design at the New Brunswick College of Art and Design for about 9 years and for the past two years I have taught at St. Thomas University in education department, a course called, Art and Society. It is a bout bringing hard-core education and hands-on making and interpretation to classroom and regular science students. And I also teach course called Images in the 20th Century 3-D Art and Architecture in the Renaissance College for visual learners. So, I am all over the place.

Renaissance College?
"It's all connected to UNB, I am a faculty at UNB."

Could you please provide an example of an interdisciplinary teaching. (For example, creating poster campaign for engineering department on a subject of engineering, while working together with engineers.)
"Oh for sure... There are two things, there is an interdisciplinary approach and there is a hands-on approach in which projects can go. Which to me is really important because then they can make a statement and could matter more because ultimately what we are dealing with, we are training students to go out-there into a real world to do this. So the more experience they can get, [you know] your poster example is perfect, we have done this a bit at the College of Craft and Design where her we are constantly making up assignments. But if we have someone in the real world, we always do that. And its always benefits. Sometimes we use a prop project, but its ok because it is a training exercise. But I think for cross-inter-disciplinary things as well, I sort of like to bring lecturers from other fields. If we are talking about Photography, I take photographs, I am pretty good, but I am not a photographer. So if we are talking at UNB about photography, I would bring a friend of mine who is a photographer. We would have a joint 'crit' or something about a project. Because all of sudden, students' respect goes up. It is not just a teacher, it is a real photographer. And I have gone to a class as a guest teacher as well often, when they are doing an art class, or when they are talking about architecture, medieval architecture. And it helps as it is not just you reading from the textbook. You really need someone who really knows, who is an expert. So its critical. And it makes it matter more.

One of the tough things about design, industrial design, and art, we are pretty small city. Fredericton - we are a city of about 50-60 thousand people, so many design professionals here, many of them here, the reality is, are not the greatest. You probably do not get the best of Canada's leaving in Fredericton. So the challenge here is to get people

who are really qualified and not just a designer who is good. And its a little bit trickier here, these people who teach design, we would not say who they are, or not design, but teach certain techniques here that are really not necessary. But the all got to. So it is tricky sometimes. So that's why bringing in professionals is always a good thing."

How do you promote creativity?
"Its a tough one, because I think that's what every teacher wants to do. But I think one of the biggest things is to encourage them. I think one of the best ways is to give students something that haven't done. You just drop this massive project on them done by a great master or something, but they can't do it. I think braking project down into manageable sections. Where you do not have to feel that you have to go from 0 to 100 immediately. Today we are going to go from 0 to 10, and tomorrow 10 to 20. And that helps them to build the confidence slowly. They realize that I can do something perhaps, but I just have to take time."

"Another thing I think is is to give them projects that matter. If they do not care what they are doing, they are not going to invest themselves in it. [You know...] Every year I get older, students get younger. So, there is a certain gap of sensibility that changes. I can go on forever, but what matters, is what important to me, might not be important to a 18-year-old. So I have to kind of dig into their heads and figure what is important to them. How can I make my projects speak to them? So if its graphic design, I wan tot give them something that does not cheapen, but make them want to invest themselves in. So [you know], young people are really into music, generally. So, give them something to do that involves music, their favorite band or something versus some government department or something they really do not care about. Just o build the skills, they need to have a statement they care about. I think this is pretty important too.

Do you think students are generally more creative, while working on the interdisciplinary projects?
"100% certain, yes. But I think it's a factor how much they are willing to invest and explore. Because now there are so many distractions, like Blackberries. It is so much more challenging to maintain their interest, their attention. So its hard. You have to become more entertaining. But at the same time, I think, when you get them – its amazing. You have this epiphany, you suddenly you realize, you give these students something meaningful. It sis hard, but its really up to the teacher to express things in an exciting and creative way. An oftentimes, being creative is also a work, vigor and time. And I also find that more and more student are less willing to put their time because things are fast. So its hard to... Its one of the hard things is to encourage students to take their time."

"Computers are great, but they have their time. It is funny. I have spent thousands of hours on projects, depending on what the project is on. And the students, when they need to spend on average five hours at home on project, 20-30 hours on average a week. And they will come back with this piece of garbage and they will say how much time they spent on that thing, and I will ask, "How many hours". They will say, "Couple of hours." And couple of hours is nothing. So, the concept is time. You should at least spend 30 hours on this. And its gone. But sometimes this is the problem how they kind of they miss that time is value. But somehow get them to do a project, and then suddenly they will realize that this is magnificent. Work comes with time. And sometimes you get sloppy work and it is hard to break that habit. I also think its about breaking bad habits. If you want to be an intredisciplinarian, you have to do it through the encouragement. And it is a hard question to answer – everyone is different. "

"The key is to have them think it matters. That is why getting them to do the things outside their field – matters."

Do you incorporate and interdisciplinary approach in your classes? Provide a few examples.
"All the time. Like I say, I give my students at UNB at the Renaissance College, and they are not the artists, but they are social workers or whatever, but everyone today has a digital camera. And I would give them a project, and for most of them it would be a first real art photography project. And they are pretty good. I mean, you can do pretty good things with a technology today. And again, I brought in some real photographers to kind of go through their work. And there was some wonderful exchange of ideas because they also see things I do not see. So, its all about bringing those people, that's is a big thing."
"Also, I am the only architect on staff at all those places I teach at. So, how often do you deal with architecture? It

happens a lot in different discipline and courses, so they would bring me to give an actual talk because you can certainly bring more insight. As for real projects, I worked for the Architect Association of New Brunswick. They had their logo re-designed for their 75th anniversary, so I made that a project in class. So, it got used. Plus, they got paid for it! So there was a little competition. So you make it not just, "Here is an assignment". You actually make it a competition. So, there is a little bit more sense of competition, so you trying to work a little bit harder because you want it to be you. Plus, you want to beat your friends in class. So that helps a bit. So you want a little bit of competition."

How does it work?
"Everyone gives an idea. Everyone delivers 10 ideas. And the winner gets 100 bucks. Plus it is a bargain. To hire a real graphic designer is usually more, but for students it's usually a lot of money. Plus they have to do work anyway."

Were there are any challenges?
"Yes, I mean, sometime working the deadlines. Bringing the deadlines from real world is different. I mean, you can't miss deadlines. Students do it all the time, "Oh I did not do it, can I have an extra week?" And sometimes teacher would say "yes". But in a real world, if you miss the deadline, that's it. You are out. And deadlines like this are a matter of not being a hard-ass as a teacher, but a matter of that you can't miss any. You cannot be late, or you will loose job. It's hard for students who come from the culture where teachers always give deadlines. So, if you have something by this time, great, if not, you go. And [you know], they get upset, but you have to do it. So, yes, schedules are really touch sometimes.

4.2.4 INTERVIEW 4

Typographer, Educator
Schools Presented at the Interview:
Ontario College of Arts and Design, York University – Sheridan College, Humber College (Toronto)

"When you say interdisciplinary, I mean, I am teaching and I am teaching from my own point of view and I have my initial degree as in English degree, French and English literature degree, so I have a long-standing interest in linguistics. And I would say, I use, I have many interests, but I am specifically interested in linguistics, as a lot of applications to certainly as a hypothetical teaching. But honestly, in the programs I teach in, I would not consider them being an interdisciplinary. I would not consider that. Even the Masters of Design at York, or York-Sheridan, it is really a Bachelor of graphic design. So, I would say, more interdisciplinary would be good, and I want to see it as an element the way people teaching."

Do you think other schools implement it in one way or the other?
"In a way it is not well-defined. I think schools, like for example OCAD, that has its industrial design, illustration and fine arts that certainly influences the culture of the school. And it influences what gets taught in classes, but it is not explicit. And they do not deliberately say, [you know] lets switch all the art teachers with the design teachers this year that kind of thing does not happen. I mean, the formality of an interdisciplinary design or an interdisciplinary education is not there. I think, it happens in fact, but in a way that is hard to, I mean, you have to look at a particular case, and then go, lets look at the case with me, ok, his background is English literature, does influence his

teaching in typography. And as a typographer, when I teach other courses, they tend to be typographically heavy. If a photographer teaching design class, even if the course description is identical, of course the photographer, there will be lots of photography in there.

There are a lot of places that claim that they are an interdisciplinary, but they are not?
"Like whom?"

York? They say, "York – an interdisciplinary place to be".
"No, no, no! I made fun of them, when I was doing my Masters because they displayed everything, but they weren't doing all that work. "

I would not know about Masters, but the undergrad was really closed.
"I tell you when I was doing my Masters, one of the best experiences I had. Which unfortunately was not planned, and I do not think it worked for all students in my course work, but I was volunteered to go and help an engineering prof at Ryerson to help, to work on the captions for deaf people. It was really interesting. Because there, working with engineers, I realized how they are not really good designers, how they are linear. So, here is the goal, here is how we are, and they do not think of many ways that you can get there. That's how they think. And that was an interdisciplinary experience. Really, generally, I do not see it in schools.

Working with people on campus, collaborating with other disciplines...
"Which they never do here [at OCAD], which I think is good to have some informal stuff. It is not for credit. We did a thing with the University Health Network recently, where we had five undergrad students, work on re-designing forms. Because they determined, the study has determined that misreading forms was a problem and it was leading to incorrect dosage of a medicine that was given to people. So, five students went and did this. So I think in a normal undergraduate experience, where it is not part of their formal education, where they got no mark for it. I think it is fine, the work they did they put on their resume. The work they did was a good work, but it was not part of the formal education. Even though it came from that thing, but it is is kind of I mean, I think, it was a great idea, but this kind of thing is very difficult in a way. It would take a whole new way of looking at the class structure. For example, this project started in November, and ended in May. We had no control over it, when the project was going on. So the students... So it wasn't something that was provided on a semester-by-semester program. So this is an example. And this is a project I have been involved in. Is where they [students] go and work with people in the neighborhoods and they do an interdisciplinary kind of project, but it does work within a semester system, grading system, that kind of thing. "

York has many disciplines, that you can involve, but it must be harder to do such thing in OCAD.
"And here [at OCAD] the only choice, rally, is to go outside and work with other institutions. If you want to have something like that. But you are absolutely right, York could do that. But they do not."

I did not really see opportunities at York to go outside and design for another faculty, per say.
"That, again, they did that in the Masters program. But a good point. They did it and I think they stopped doing that in the Masters program because I think it ended up being too unpredictable. I had experience, I did mine, but with someone else it just did not work. They never showed up. Never paid attention to them. So, the whole thing was the waste of time. It really takes... It really takes, when you really get into things like that you are dealing with different cases and it is very different. If you like packaging and you have experience in type In your class you will have students who all have the same background, who show up at the beginning of September and go away at the beginning of December. I mean, I see why there is a reluctance to do that. But, I think it is worth making an effort to do that. And again, people do not make an effort to do that. And also even the places like here, it is an art school. [Right?] If you are a design student, don't try to go and do anything in the Printing department or a Fabric department, Material and Arts department, "How dare those people from design come down here!" The same way people don't come to design department. So there is this kind of territoriality."

Yes, I see students mimicking hands-on techniques on the computer and it just does not look good. It may be even easier to draw and then scan or use printmaking.
"Absolutely. I have seen the Illustrator brush before."

What is your methodology for promoting creativity?
"Yes, absolutely. I like giving them tests actually. But this is particularly in Typography. Because there is a lot of factual material and Typography is the area of expertise in the way that, perhaps... design the logo is not. I mean there is expertise, but a lot of is just an aesthetic thinking. There is more to know in typography than in most things. Anybody can have a favorite colour, [Right?] We need to know something about Typography to have a favorite typeface. Even the Arial I am talking about, one of the top on the list. One thing I like to do is to send people out, and say, "OK, go" and, for example, I have a little project where I say the basic type things: old-style, transitional, modern, classic, script, and I send people out with the camera and say to bring the example of each back. I do tend, I try to make my projects realistic, but I do have specific things in mind and I have specific things for them to learn and I do not want them to pay attention to things that are not related to the class."

Tests are a good idea...
"Yes, especially the visual ones, where you have the questions that makes it more accurate."

Do you think student's level of creativity depends on the nature of the project? Do you think constrains are good or bad?
"I mean it depends. I mean again, when I think from my Typography experience, giving somebody a bus schedule to deign is a good project because it makes them think about structural things and about clarity, but probably creativity is not going to be a huge part of that problem. Maybe, they will amaze me with an amazing bus schedule that I have never seen before, and I will think it is total genius, right. But probably not. But probably it is going to be, where is it by saying, "Do whatever you want." I hate that. It tends to be less creative."

But sometimes with projects with less constrains you go all over the place...
"But it is creative if you are going all over the place. You are creating the whole thing. You might not be creating anything good. If you don't have many constrains, you might be doing "gross creativity" and not a "fine creativity", if I may say that.

Do you incorporate an interdisciplinary approach in the classes you teach, and if so, could you provide a few examples.
"To some degree, an interdisciplinary – no. I mean the students work within themselves. But in some projects I would encourage them to go out and interview people, but that is more like a client, where you are going out to gain a little bit of expertise in order to successfully produce something. The exception to that are those external projects I was talking about. Of course, it is very interdisciplinary, and it is kind of annoying that many people think that designers are not very intelligent people. We were working with human factors people and ergonomics people in University Health Network. And we also deal with human factors too, but in a more cultural sense. And many think that designers just decorate things."

Can you describe a recent an interdisciplinary project in class that was successful and if there are any challenges.
"I mean, its hard for me to do in-class projects. By their nature, they are not really interdisciplinary in the way we are talking about it. They are an interdisciplinary by nature if we are dealing with another subject. It is not just pure design. It is not just an aesthetic. Design being turn towards them, and I mean, by nature to some other field, whether it is marketing, whether it is, [you know] human factors kind of thing, how your eye moves. There is this interest of an interdisciplinary in it. Which is one of the things that makes design interesting because it is great for ADD people because they can do different staff every month. But I cannot think of one to answer this question."

What about Humber?

"No. I mean Humber tends too. Humber has the average program, and so and really not an interdisciplinary, but they tend to do real world projects. So, I guess, maybe the marketing students and the advertising. Actually, I think their marketing and advertising students actually do stuff together. Which is em... But I don't know really."

For example at York, when you take Typography class you have access to a type press, but in many schools it belongs to Printmaking departments.

"Yes, absolutely, this is the case here and at Sheridan. If you are in design, you need to take a Printmaking course. If you take a Printmaking course then you can kind of, use the press. But if you don't take a press course, you can't really."

But you can use it for design work.

"Yes, I know. but again, there is this jealousy. I think that points you are making are excellent points, but it is not happening. I think to make it happen it would take a real effort and not just lets do some an interdisciplinary. You have to say, this is the interdisciplinary program and here is why. I think it is a great thing to do for a Masters or something, because yes, you can design such a program, and I mean, you might not be able to institute it. But it could probably lead to something being done. Here is a little and interdisciplinary here. There is one design instructor here who is getting his class and he contacted illustration students. And illustrators and designers have worked together. So the illustrators had to produce a story for the use of image designers to design. So it is not very interdisciplinary, I mean illustrators and designers are the same school, but still it was that... it was innovative because people weren't doing that. And even here, illustrators do illustrations and designers do design but they don't work together very much."

"Yes, there is this expertise. You would learn something. You would learn how illustrators work, and how designers work in one school."

It is such a utopian view...

"Yes, it is kind of utopian, but I think it also doable. But it would take a decision at a very basic level. They have this an interdisciplinary Master at the master level here, art design, and I can't remember."

"But I would not presume that everyone from a same school have a same point of view. Often they don't."

"Colleges are kind of, come from a trade school, even OCAD too. They come from that idea. And at the beginning, I would say that historically, design was an expertise. You had to know all those, where to get type, you had all the hierarchical colour separators, you had to know all these... so that interdisciplinarity was not part of that. Coming at the university end, I think, there is a little bit more willingness to look at the other disciplines and an interdisciplinary value is more part of the university culture. I would be surprised if you found much in the college thing, I think, they tend to be still, more... They teach the trade. They recognize that the trade has changed; they recognize that things like the research and they use research methodologies in some classes in some colleges. But they tend to be fairly light. They tend to be instrumental like how to do web searches."

"And there lots of things like scheduling. If you were doing a course, there would be problems with people being unable to meet. Even fro a group projects like that. I was teaching this big research methodology classes and the first semester did, I assigned groups and they all hated each other, they all hated me, I hated them. It was just an awful thing."

People do not like working in groups...

"I think it is truer here than anywhere else because people live so far away. There are bigger programs here, so people tend to know each other less. The culture is more cohesive I guess, here [at OCAD] than in York-Sheridan. You have to take the bus."

4.2.5 INTERVIEW 5

Educator
Schools Presented at the Interview:
York University – Sheridan College (Toronto)

If you have taught in more than one institution that involves an interdisciplinary approach in the design classroom, would you say that an interdisciplinary teaching method varies from one school to another? How?
"I have only taught at Sheridan College in the York University/Sheridan College Joint Program in Design (Bachelor of Design) so it is difficult for me to comment on how it may vary from one school to another."

How do you generally promote creativity in your classroom? Do you employ different methods while working on either small or large-scale projects? Do you have main techniques?
"I try to incorporate exercises during the class so even if I am doing a lecture, I have the students engage in designing or making something related to the lecture so they can test the principles or concepts introduced. I feel this helps to promote creativity as the act of making or learning by doing helps to embed the principles/concepts and the student may be more likely to remember them and test them within their own creative process.

As for small vs. larger projects, a lot depends on the amount of time for the project. Sometimes if students are given too long to develop concepts, they get stuck, so working quickly and intuitively can be an asset, especially at the beginning of a project.

The main techniques I use are brainstorming as one large group or in smaller groups, using exercises to compliment lectures and group and individual critiques throughout the time frame of the project."

Do you think students' level of creativity varies depending on the nature of a project; for example, students are less creative if the project has specific constrains? Do you believe that students have the same potential level of creativity for any given design project?
"The level of constraints is an interesting issue because sometimes more limitations can stimulate creativity. If a student is faced with a blank slate and no parameters they have trouble getting started. At least with design students, they seem to find it helpful to have one or two criteria that provide some sort of framework or indication of possible starting points.

I do believe that the potential level of creativity is similar for a given design project but as a student develops their confidence from first to fourth year (assuming they are in a Bachelor degree program) they become more comfortable with less constraints and can self-generate content and concepts more easily. That is not 100% true of all students but it is a general trend I have observed. I feel confidence in design skills helps students take more risks conceptually."

Do you incorporate an interdisciplinary approach in the classes you teach? If so could you please provide a few examples.
"I teach a fourth year course in Sustainable Design and I have tried to incorporate an interdisciplinary approach by expanding the project areas into other design disciplines such as architecture, landscape architecture, interior

design, product design as well as education, ecology and sociology. I feel that this type of approach is essential for learning about sustainability because the principles and issues are not confined to one discipline but require a holistic, systems-based approach.

This year, the students are developing proposals focused on Sheridan College which has launched extensive sustainability initiatives in all areas of college life, from resource and waste management to curriculum, communication and finance. The students are engaging directly with people who work at the college in these various areas and by doing this, they expand their notions of how design can have impact and influence within a broader sphere and how design connects with other disciplines and areas of concern.

Mid-way through the course, I organize a seminar session at York University with faculty and graduate students in Education, Environmental Studies, Ecology and Design who are based at York so the students can engage in discussions exploring the intersections between design and other disciplines in relation to sustainability."

Can you describe a recent in-class design project of an interdisciplinary nature that was successful? Were there any challenges? If so, what were they?

"Sustainable Design is the most interdisciplinary course that I teach so the example given above describes how the students are approaching their term projects. The main challenge is that the course is only 12 weeks and it takes time for the students to do the research about how existing systems or procedures work and why they are there in the first place. They have to analyze all the information and synthesize the analysis into design proposals and then represent concepts to a certain level of depth and detail to be convincing and viable. Some proposals are more conceptual than others but should still be thorough and comprehensive.

In my experience with teaching and in my own design practice, interdisciplinary projects take more time and require a lot of coordination. As an instructor, I need to spend time outside of my usual duties to connect students with other people for their research and to find resources that will be helpful for their projects. Despite the additional effort on my part, I feel that the experience of working/talking with others outside of design enriches learning and is totally worth it.

Challenges for the students with a longer project include maintaining momentum to carry their concept through to the end and to manage the inevitable low moments when they lack confidence in their knowledge and skills or hit a barrier in their research or design process. When they are working on projects that are not directly related to their area of study (i.e. graphic design) they face the challenge of learning the language, principles and modes of representation and communication that are part of a new discipline.

Directly and indirectly, when design students can engage with peers, faculty or experts in other disciplines they become aware of how they fit within a larger community and start to develop a perception of themselves as local and global citizens. This is very important within an academic environment, as we tend to become too insular. The goal should be to expand opportunities to connect acquired knowledge with experience and for students to see how their process and decision-making can have a positive influence on people and their environment."

4.2.6 INTERVIEW 6

Educator

Schools Presented at the Interview:

York University – Sheridan College (Toronto), MacEwan University (Edmonton)

(Interview length: 1 hour and 19 minutes)

"Ok one of the... There are many issues when the project is coming in from outside. One is, oftentimes, your course outline needs to be developed before the project materializes, ok? Or the client... may not happen, the timeliness of things may not happen the way you want it. So, what is end up happening is that sometimes... because design is situational. It is situational with a client. It is different. So it is your jury to bring the course outline based on what might come about. So sometimes it is hard to know what those outcomes will be. It is hard to define what the learning outcomes might be. You got that first linkage happening. [Right?] So sometimes I found, I have to take my course outline, throw it out, okay, say, based on the list of our new course outline, everybody agree upon it and sign it. So, it is being tailored to the actual things, to... the projects being tailored to the students. And the outcomes are generally the same, but they are not as specific as a lot of those institutions want your course outlines to be. And course outlines are social contract with your students. So sometimes you are finding you have to do that, here is a case to point. A project came in, a high-profile project. We are doing a website for this individual. And what happened was at Sheridan, it got snapped out by... it got filtered down and went by a multimedia curve, and it is one-year, post-diploma, 18-weeks of high intensity programming. [Right?] Well, the guy who is sitting at the meeting says to get design students involved in this. [And, so...] The problem is that the project that was associated with this other program. And this person who is overseeing it, was a production person. So, she was already in production mode. She was already teaching them how to produce it. They haven't even designed it yet and they were producing it. So the focus was on what would you use to produce it, or we could use a Wordpress, we can do this and this, I told, "People, you don't even know what the content is. You don't even really know what he wants." [Right?] So how can you know what he wants to achieve? So, they were really in a production mode and I realized, I had to pull out of the project because [you know]... Our students were already doing investigations and stuff like that but since it was not really attached to any course, I have realized right from the beginning that I had to really bond heads. Because the problem with this is really... If your project is going into one direction, and your course is going into another direction, what do you do now? [Right?] Now it becomes problematic. So, from logistical standpoint, there are some things that are, as an instructor, you need to stay on top of. [Right? So...] So, those are those kind of things. So, from the student standpoint, yes, I think, the students' concentration, I guess they are buying to the learning is heightened when they are working with people. And as you can see, as your instructor or supervisor has told you, the hardest thing is to get students to actually go out and talk to people. In my workshop, I am absolutely animate that people have to interview people. [Okay?] And they all want to do surveys, and they all want to do it with their own students, it is completely useless. [Okay?] So partly because you are part of the whole world of academia, that they have been engaged in. And it is your comfort zone. And you need to push them out -like the chick out of the nest once in a while. To just experience others, other perspectives, especially, from design standpoint because design is filtered through the designer. [Right?] No matter what comes into a problem set, it is filtered through you. So the more exposure you have of other perspectives, the better the filtration system is. At least ask the intelligent questions, or get used to ask intelligent questions, or go into this sort of quizzical mind. [Okay?]

The other thing is designers... there is also this problem of this applicability of designers have to have all the answers. People are coming to them because they get to solve the problem, and they need to know the answers. And only they can solve the answer to the question because that's is what designers do. They form-build. They form-build based on the criteria that has been established. [Okay?] So, they feel that they are the ones who to have the answer, "That is what I am being hired for! I am a problem-solver". [Okay?] But the point is, they haven't really investigated the problem set. So, if you are not going to talk to people, how are you going to really know? So, here is another scenario, if you talk to someone to find out what they think their problem is, is not their problem! [Right?] When I used to work in studios, the issue was... the practice of a lot of studios, is that a client would come in and say, "I need a brochure done, I need an annual report." [And...] Or, "I need some piece of communication, or I need a website." [Right?] Well, if you can't investigate what their real needs are, right, at least discuss them on a level, you might find out that is not t heir problem! Maybe their problem is their business model. That is why I teach how to design a business model in my classes. Students look at me weird. And I say, no listen, if you are going to encounter people who are trying to run businesses and their problem is... they don't have a business! [Right?] Or at least that is what they think they do.

I have mentored someone here in Edmonton. They have seen their business developing... the physical fitness business. Based on the model we helped to develop, his business, now has expanded expeditionary in a year. So oftentimes, it is not about people wrapping themselves around big words like 'branding', or things like that. I don't want to finish any of that. But [you know] problems are complex. You need to have versatility to come from many levels and sides of a problem."

So, how do you teach people that?
"Well you expose people to it."

How do you expose people to that in the classroom? It is still very theoretical.
"Right. Well, you can bring in guest lecturers and everybody falls asleep or turns their Youtube channel on. Or where I find it interesting, you bring as project. Once you bring a certain project in, then the mind set is that, "Oh, wow, I am actually doing something". There is a better buy-in into the project. My approach is sometimes through a workshop. And as you know a workshop is a constructed workshop. And the first time we did it was a six-week course, so it was a Fall-Winter term. [Right? And like...] as normal form-builders as we are, we wanted something in a second term. So everyone was racing into making something. I finally turned to my colleagues and said, "Okay, why are we doing this?" Why don't we slow the process down a little bit? Why are we looking at this course as something that happens in 13 weeks and another 13 weeks? Why don't we look at this as a 26-week course? So, what you do, you slow down the process of research. You say, okay, if the research is the first component, then lets get them to actually research, lets get them to talk to someone, lets help them to find a problem set. What is the real problem they are trying to solve? And then, let them develop a form of communication that the best fits our problem. [Okay?] So, that slows it down. It certainly creates other issues, but it gets them into methodology of asking and researching first. So, we do approach it that way, so they can say, "Look, your research is going to be much more extensive and more vigorous." We are not asking for a Masters thesis, but we are asking to at least interview somebody. We give them a broad theme, as you know. And we basically say, based on this theme you can now be very flexible in what you are trying to do. So it is challenging for students, but it is also very liberating because at the end they realize, that the designer does not need to wait for client necessarily, designer just needs to find where the problem is, right? When we teach interactive systems, we talk about, what is the area of concern? What area do we want to investigate [you know]? And then you interject yourself, and then you figure out the problem, and then you figure out the solution. And you don't need a client for that. You know how empowering that is. [Okay?] One year I had six guys in the class that have decided we are going to look at the family... actually, we were contacted by a lawyer. He was a very big advocate of an information design. What he did was, he... presented the problem set to a bunch of my colleagues and myself. And what it was, [you know] the Ontario Family Law Act, where you can defend yourself in court when you in a divorce process. It is one of the only places where you can actually defend yourself without a lawyer. But the problem is that, under the act, there are certain procedures you need to follow. There are certain protocols and procedures you needed to do. So, if you are in a divorce scenario, you might hire a lawyer and your spouse is going to defend themselves and he did not give the right forms in, or did not do right procedures. It is delaying it, it is costing

you money, you run our of money and it bugs down the system. It is a real problem. So, we took the Family Law Act, a 57-page legal document, and after we started to dissecting it, we found out it was all about a way-finding! It was all about: where about you had to be, what forms you needed to put together, [you know] if you were...did you have, is it a simple divorce, in other words, there are no kids, there is no other splitting of an equity that is very equable between you two. [You know] there was one root you had to go. So, when we mapped it out, it was a difficult design. It took the understanding of a language that lawyers tend to wrap themselves into, and we said, why don't we map it out visually? And all of sudden, it made sense! The whole thing became nothing but procedure and policies. Then, it was easy making an interactive system. [Okay?] So what did we learn from that? And, I think, it is very important when you bring things from the outside, the briefing, re-unfolding... Ok, lets take a look at the whole process from the beginning. Why did we achieve the way the things we have achieved? Oftentimes, the design in students' minds is very linear: I kept all my research, I have gone off and I have done my questions [you know]. It is... One of my colleagues, Heidi Overhill, said, which was like, and I think she quoted someone else, I don't know who it was, but its like "We give students all this research to do, and they are coming up with this big paper, banging it on the desk, and go away and do whatever they want to do anyways." So that is another problem. How do they translate all this research into something that is tangible. So that reflection period, design is very much about reflection, is vitally important. I found this in our interactive system courses. What is very important is that we will take people through a stage of research, evaluation of the research, and then synthesis. But because it is linear, based on small little projects, it comes out very linear, people think that it is step-by-step process, but what they don't understand it is reiterative process [you know]. I will talk about how do we define what design issues are, right? So, first students will come up with very strange, ordinary issues, because they don't know what the issue is because sometimes an issue has not presented itself. But as soon as they starting to work, the issue pops up and I jump on it right away because it is important that you indicate it yourself, "Wait a minute, is that an issue? What do we know about that? Or maybe we need to go and do some research!" So that idea of iteration, it is like baking. You don't just put stuff in the pot, and bake it, you need to fold it all in. And I always try to do deep briefing or a reflection period at the end of the projects to just go over the steps again. And then from the standpoint of iteration, right? You have to go do this, and you have to do this, and you have to find out more. So, they can see that loop. [Okay?] I think this is critical to a narrow understanding. So when they are asking the questions, even the first questions in their interview, they might not be good questions, but they can go back and ask again other questions, right? Because you are going to find out the way you are doing your research, also you are going to be writing things, and then some sort of argument will come up."

Yes, it is all over the place, it is not linear at all.
"Another problem that you have from the things that come from outside in, and this year was quiet interesting because we actually had a client come up to us to support out grad-show, but he wanted something done. So, we basically got donation for our time to design him something."

I do not remember what that gradshow class was called, where you work on the gradshow as a class.
"Professional Aspects."

So yes, you worked as a whole class in Professional Aspects on this project? How did it turn out?
"Disappointing at first. It was kind of interesting because some of them felt they were giving out ideas and they did not see the benefit of doing that because that was giving them quiet a bit of money for the gradshow. The first iteration we had a great response but a lack of luster [you know]. So, later on, it actually went on really well. So obviously when you have this many students, some stepped up. And it ended up being good to a point where clients were talked about coming back. Now... my concern is... and there is a moral dilemma here too. The concern is that even though it is beneficial to the students and to the learning process, the problem is that institutions should not be acting like design studios. Because could you imagine how pissed off you would be if you have just graduated and you were competing against us. [Right?] And oftentimes is where the faculty becomes the mediator. Because oftentimes you get people constantly knocking on your door asking, "Do you have a student?" In other words, it means do you have a work for free? [Right?] I remember colleague of mine was contacted by a lawyer who wanted someone to do their website. For free! They would get a nice portfolio piece, they could practice their craft. And her

response to this person was, "Right, do you give your legal advice for free to practice your craft?" And the answer is "No." And [you know] that is when the institutions needs to step in and provide strict guidelines for that. And here is another thing, coming back to this project that came to Sheridan College and that was basically another area and we were asked to help out. My first question to everybody was, "What happens when the students fail?" And the Dean of the Computer Science basically turned around and said, "They can't fail!" Yes, they can! So what are you going to do? I said, look, here is a problem, [you know] when there are expectations from client's point of view of a performance. How can you guarantee that performance is going to be there? Right, as we all know there might be a situation especially about small classes, people may not be interested in, they may not be get the body in– [you know] and the results are lackluster. But clients... now essentially they may not be paying for it so it really doesn't matter. They can still go off somewhere else. But there's another intrinsic thing that starts to happen – what does it do to your reputation? [Right?] Because this community is the community that does talk to each other. So, you've got to be careful about that too [you know]. My response was, "You need to ensure that the infrastructure or the mechanisms are in place to allow them to succeed." I should not be running around trying to find a piece of equipment, you need to give it to me. [Okay?] You need... [You know] those kind of things need to be in place. Otherwise, it could just fall apart. They can either be highly successful or fall apart.

The other thing is, [you know] this linkage between learning outcomes of the course versus the needs of a client. Where is this slippage going to happen? So, [you know] if its a course in the undergrad called Interactive Systems, like for example, in family law project, the problem was, I automatically said, "Oh, you can do an interactive system." And all I've got is nothing but resistance. You know why? Because the lawyer says, "It cannot be an interactive system." Because when the Law Society tried to put all their books online and it was a disastrous costly venture. No one is interested in putting an interactive system, meanwhile I've got this course called Interactive Systems I am introducing this to! Okay, so it is got to be ultimately that. [Right?] So, we are trying to figure out how it relates to. So, how do you reconcile learning outcomes with clients needs?"

Can you bring people from other departments to cooperate?

"We are attempting to that with the Interaction Design Degree, with interaction design. [You know] we are doing that with a Computer Science people. They really like what we are doing because they brought in... They want us to do a lot of interfaces for the cellphone maps. So, we put that into a project. Right? For Sheridan. So, this is an easy, no-brainer because they are really close to each other and they are working with each other. So, that kind of collaboration needs to happen too. And it is interesting because when we have research, applied research that comes in, from the government. Oftentimes, there are conditions, right? That it has to be a pairing between companies, it has to be with an institutions. It has to involve students. [Right?] So, there is already within mandates like this and Ontario students do quiet a bit of that right now. Because what they have identified is that there are a lot of companies out there that want to do innovation, but they can't pay for it. Not at the professional level. So, they are trying to create this new niche, where we could work with a professor, and with a student, and develop that relationship. And hopefully, they will hire a student, afterwards. But here... But they also understand the moral dilemma. Another thing about this... it is escaping me now. I forget what the name of the funding mechanism it is. It is an innovative funding from Ontario government. No, it is from a federal government, it is a fed-dept program. It is about kick-starting innovation. Now the thing is... the problem that was happening is that all the projects seemed to be innovative projects. I recall at first that there were about seven projects that came in. Right? And Doug Whitton and I were there only two interactive people amongst all of them from a design department, right? And Computer Science people were there. What was interesting at the table, when we were staring to get those briefing notes in the briefing sessions, we certainly had to keep all the layers, we had the associate deans, and other members who seemed to be showing up at the design faculty. And at one point and time, I said, and [you know] they were trying to get us into commitments, to do the projects. And I finally turn to the dean and say, look guys, "I am all for collaboration. I am all for about doing stuff together with other people. I love doing that [you know]. But right now I don't see any faculty members at the other end of the table from other departments. And the problem with that is, I need a butt in that chair that is going to be committed to this project." And I said, even the way how they bring projects on the research level, is problematic. I said, you know you want me, there are seven projects that I can choose from, you have different people assigned to these projects [you know]. So just from a logistical standpoint, I

said, it becomes problematic. Because, just to get meetings with people on a weekly basis. Its just logistical. You have to meet with this person, meet with that person, or physically meet with this person on one project, or the next project. It's almost impossible. I said, the way you should do it is to develop pods. Pods of people. So, if you are a computer scientist and I am an engineer and I've got graphic design, then I always going to be working with the same group. I find some people have worked good together. So, when the project comes in, we can bit on the project. And guess what? Then, we can work on three projects. I probably would never work on three different projects, but lets say, I work on three different projects, I only need to meet with two people. And the same two people. Right? So, half of your energy is not wasted in just making up meetings. Right? So, at the time with this kind of things, it is a data problem of inflow and outflow. Its a problem of how are we going to bring that in, how can we make those connections. You know, even problem... if you want to bring students, I say, computer science and design students, then you need to from a design... an educational standpoint, from an institutional standpoint, you have to have professors already talking and collaborating earlier! [Right?] So I know, we are going to design in first term, and they are going to produce in second term, then there is this energy and a flow. Flow of information, flow of a project. A project flow. That institutions that are broken down into own singularity of disciplines does not allow that to exist. [So you know.] So, I have been sort of voicing that and trying to get people to think about this kind of things, you know. We need to talk about this in the summer, earlier – before we start planning for the fall or winter. [Right? You know]. And here is the thing, they have something in computer science where they actually bring projects in and they call them work-study projects or... I forgot what they call them. But they actually work on client work. And so they bring that in, but [you know] it is just its not been filtered through designer. It is got a programming problem and they just do it. And it works quiet well for them. [You know.] Because it is oftentimes required to put some programming in it. So, we are looking at that. We are looking at that kind of pairing. And I think we are in this unique position that can allow that to happen. But the only way to get... The two associate deans are trying to make that connection going. [Right?]"

But its hard.

"It is hard. It is challenging, but it is possible. Just like with the Sustainability Lab. When we opened the Sustainability Lab, one of the first issues that I was suggesting was... first of all, you survey all the individual that things people are doing because it is the issue of the left hand not knowing what the right hand is doing. And now you got this thing that is called the Sustainability Lab, that people also throw funding to it, and it is like, now what do we do? We got this space. Great! Big space to avoid emptiness. Now, you need to connect people. Because ultimately people who can make it work. Certainly, the facilities are needed, but if you don't connect people, then things won't happen. Because ultimately, they are the ones who got to make those kind of connections. [Right?]"

Is this lab for YSDN people only or for everybody? How does it work?

YSDN people are certainly part of that model. [Right?] Part of that sort of synergy. It has not taken of so much yet. And here is another thing, [you know] there are some teachers who will embrace it and some who want status quo. They like the individuality of their own research [you know]. There has to be a mindset of releasing that and dealing with outside people. [Right?] It all depends on the research it is the faculty members are doing. Some are doing very personal very... Here is another thing, who gets credit? [Right?] Who gets credit for it? Conversely, our workshop has produced very good projects. [You know.] [And I think...] Do you recall what the theme was for your year? One year we did..."

Something to do with a wayfinding. It was obviously one word. It was very open.

"It is purposefully done that way. Explore the city or something like that? And we got a lot of backlash from the student because they all though it was a wayfinding project. No, there are many things you can explore in the city. [Right?] It does not have to be a wayfinding!"

Exactly, because a lot of students think linearly. Well, once you are in design program, you only think design and it is hard to think something else.

"When you brought that scope, then the questioning becomes broader too. [Right?] And it is interesting. I do in my workshop, I try to gear out students after they are done with their research stage to really try to really understand what their defining of the problem first? [Right?] Because the most critical thing in any project is that definition.

I will give you an example, that project I have been working on now. We have been looking at the interface for the company that has built the ATM essentially for the pharmaceuticals, okay? It is a machine. There are prototypes out there. And we have been asked to look at the interface and help with that. But my first... So, we have been doing a lot of interviews with the company. And I told the students, the problem is that is their problem set. [You know...] And I told the company there is a problem with the definition. We are going to design an ATM machine for pharmaceuticals. At the end you get an ATM machine for pharmaceuticals. [Right?] So, what if your problem set was, "We are going to develop a machine that will help patient care." Then you get a totally different machine! [Right?] Because your research and your questioning is going to be aligned differently. So, it is very important to understand that problem statement is very important. And then, once the problem statement has been achieved, we go through how to develop a project statement. Once that is achieved, I try to get them to think that this thing can actually be produced. [Right?]

So I had one students... So this year the theme was... "Migration and Immigration". So one girl was looking at invasive species in water, in lakes. And you get microorganisms that attach themselves to the boats and the problem is they by the boat moving, recreational moving, and boat moving to another location, transfers that and becomes toxic or deadly to other fish or plant-life or whatever. [Right?] So, I turned to her, and I told her, "Look, you have got an interesting problem set. Lets figure out what the actual solution would be!" So, I explained to her, I said, [you know] we examine smoking. There is only two way to affect people. All the smocking advertisements that they had for many-many years, and what did we learn from that – it does not work! It is not until it actually became a by-law. [Right?] There are only two ways you can affect people's behavior. One, is that they know that it is so deadly that people know they are better behave, otherwise, [you know...] They have to understand the consequence of that. They have to change their behavior, otherwise there is legislate, they will be fined. [Right?] I would say, you don't want people to use text message, impound their car. You will see no one will do it anymore. You got 48 hours... Because what you would do, you will pit. What is more important than your car? [Right?] So, you can legislate. What form is she going to build? She is going to build a proposal. Based on the solution to this problem, there would be a proposal to the Canadian Government to lobby for it to be legislation. Yeah, she did that! But the reality is, she did not even know this could be a possibility! I had another girl, she was researching a refugee processes. [Okay? And I said to her...] The problem with the refugee process is that, [you know] it is not so much about when you get accepted, but when you get rejected. What are your other resources? And I said, you got to be going until it completely breaks. The system breaks. In other words, there is no more recourse. At all! And she found out that Canadian government puts barriers in different levels. Even when people get rejected they can still attain. And so, I said to her, now you can produce it. Think about this thing that actually physically going to happen. [Okay?] And now it has generated some general interest at York, in Political Science, they actually want this thing to happen. [Okay?] [So, you know.] Its... I do not think you have to have initially work from outside. "Coming in" can get the same results. You can turn it in on itself by understanding the problem set first. And then... It is all based on the theme!

I had another girl who developed a phone app. [Okay?] That allowed people to look at you know, how some cosmetics are affecting your body. So, she noticed Sephora is very green-oriented. And looked up, she links it up to another database. There is this company that actually has this database. The activists. That actually tell you what are the possible linkages that these cosmetic has. So, I said to her, consider it again, that it is going to be a real project. Consider it as something... And then once you have got it – the solution. You just propose it to people and then find out how to get funding! [Right?]

So, I mean, last year, I've got at least 12 good projects that actually could be produced. You know... and I think it is important, if you are looking at design as a social interaction and it is not just about graphics. [Right?] Because there is this whole other aspect that it is about graphics. Yes it is! But it is also about information, it is also about people's behavior, it is also about a typology, psychology. If you talk about designers solving problems, then the question begs, "What problems are you trying to solve?" [Right?] You know...

Was it helpful at all? Lets just go over your questions again."

Sure. If you have taught in more than one institution, which you have, how does an interdisciplinary approach varies from school to school?

"Teaching an interdisciplinary methods... like I said, it is situational. [You know...] to bring something from outside in, it all depends what the problem set is. The methodologies might change. [Okay?] Approaches might slightly change. It all depends on the project. There are many factors that are involved in. Our problem is that our program has a course outline that they want rigidly adhere to, because you know, it becomes a social contract. They don't want you changing it. You know, which is problematic, when you start to go, "I wanted to teach you this, but this project is not going to let me do that." And I have to figure out... I guess you can write a course outline to be generic, but there is more pressure from the institution to be more specific. They want your grading component: 30% is going to be this, and 10% is going to be that, 5% is going to be that. You can be more generic and say Project 1 and... some overall things. But there is more and more pressure to be much more specific. But you see, sometimes it does not present itself a month before a class starts. It does not present itself, you know, might present itself a week before. So, some courses are a better fit for that. Our People Architecture course, which is probably not a right title for. But because it deals with methodology of designing a system it is a good fit because basically you can plug in almost any problem set into it. As a faculty member, you need to start thinking about, you know, the course that is going to entertain that thing needs to be about methods. It needs to be about the process, it needs to be... It does not matter what project comes in, it just gets the same process. [Right?]"

Makes sense. Have you been teaching somewhere else?

"Grant MacEwan. At Grant MacEwan there was no indication to me, this may have changed, that they have been talking about design process. It was about... its was about, there was a lot of craft design theory, it was about producing projects. There was no... and maybe it was just because it was a three-years diploma. But then again, our Info Architecture class, first term – first year."

But you can't compare York and MacEwan, those are two different schools...

"Yes, you can. It is just a structure. It is what structure you want to put into it, you know. How do you want to introduce it? Its that simple..."

How do you promote creativity in your classes? What are the main techniques and methods? How do you inspire people?

"That is a hard work for creativity to define..."

Yes, it is very hard to define.

"I would say, creativity does involve questioning exploration. Even if you are dealing with ideas. As I said, design is a funnel. Its about exploring ideas first. Asking the questions what is this thing and what could it be? Once students starts thinking, I don't want to this thing, I don't want to use cliché, they are already out of mode of creativity; they are in the mode of evaluation. Evaluating those ideas, whether they are good or not. You know, and oftentimes what they think is a good idea is what THEY think is a good idea. They got nothing to gage, whether is that... you know. What are they comparing it to? So that is where you get design as a self expression, Which by all means, should exist. [Right?] Because you need to expose your own approach to your own design. But don't think that you are problem-solving. Because the only problem you are solving is that one that you have just defined. Because students have a tendency to do that, because it is easy. So here is the thing. How do you promote it? Students will choose the past of least resistance for a efficiency sake. Your job is not to let them do that. [Okay?] So this is sort of problem with a group work. A problem with group work, you give people a project. You put them into group. The first thing, everybody determines who is good at what. And if so I am good at coding, I will be the coder. And what have I learned? Nothing more that I already know. How is that pushing you out of boundary of creativity? How is that taking you out of your comfort zone? [Okay?] Now, if I say, I've got four people in a group, I say everybody has to site their work. Peer-evaluations are always good because [you know] you do get a harsh criticism of peers. You know, just give them 100%, you do get that. But you also get people who say that the person was not pulling their way. [Also, I encourage..] I also talk about group dynamics when I get into a group scenario about people who are trying to lobby their ideas need to relinquish control and need to listen to others. And those who tend to sit back and quietly suffer need to learn to speak up. I might do a couple of exercise to do that, to sort of illustrate what I mean. You know, that is just

group dynamics. Also, within the group, I might say, okay there is a definite components in this group, there might be a research component. And everybody needs to site their research, who did what. And... that's is sort of putting it on the blog or something like that is good. Because you can see that grading component will be based on your contribution of that portion. That insures that people are... which here is the problem, at the end we all want to have those little great design things. But the reality is, you might have some that are really wonderful over here and really quirky over there, because this persons did not quiet know how to do that or didn't not put the effort. Or for many other reasons or had other challenges that other person didn't. You might get a wonky object that is really brilliant over here but not efficient over here. Which is fine. [You know... You know.] You need to accept that as a teacher. I think sometimes we want to have brilliant things coming out of everybody. You know... And that comes back down to the learning outcome. Because if the learning outcome, this person got to learn creativity, then you got have to bring it in a way that failure can and does exist. I can give you an example. We had a course called Type Exploration, which had a very little exploration going on."

Why?

"Because it had a grading model that did not allow for exploration. If you have a project that has an object or form at the end of the project, then the problem is that there is a lot of pressure on students to perform to produce and object. And then we grade based on the object, okay? What you should do... Creativity does not allow failure to occur. Creativity is an exploration. What you should do is... And I said to then, you know, they should change the grading component for the course. Look, we have a lot of other courses and this course is on exploration. Then a grading criteria should be based on the level of exploration and a component at the end should be a reflective component, where you say, "Okay, what worked and what didn't and why." So even if you failed, you need to reflect why you failed. If you succeed then you need go and reflect why you succeed. Or what could you do differently? What would you do to push creativity back again, a little bit more? But it should be based on the amount of exploration, not on the quality of your end product."

But most schools are worried about end product?

"Yeah, but here the thing is. From institutional standpoint. [Right?] You can have a course that does that! Because all the other ones are trying to produce products. If that we are trying to do – a course on creativity, we should be exploring ways. Mary-Ann Maruska had a course on creativity. And she was just exploring the ways of you know... of 180 degrees. Whatever it is, its 180! It is one creative methodology. Come up with one idea, then do 180! See what it produces. So here is the thing about creativity. Oftentimes, you don't know what the forms are. Creativity allows for serendipity to occur. It happens there, it is mistakes. [Right?] That becomes part of creative process. If you don't foster that, then the reality is... how can you be creative?

Does school kills creativity?

"It is not so much that school kills it, they don't have... You need to... You can organize it in class to allow it to happen."

Maybe they don't organize it well? Sometimes, students have crazy creative ideas in their first and second year, sometimes even more creative than in fourth year, but they usually have poor technical skills...

"Oh, I agree with you there. Because I have a friend of mine who have graduated with me from York. We went to a famous Cranbrook School. And, frankly, I though he was doing much more creative thing before he went to Crambrook. And what he was saying, essentially... If your projects or thesis project did not align with what the staff was teaching, it was basically not produced. Because if you are starting looking back then, a lot of work started looking... it were highly creative different things, but it was all filtered through the teachers, [you know]. Here is the other thing is. As teachers we need to be aware of a fact that we are mentors. [Right?] And oftentimes students take on the personalities. They may go with the teaching, they may take on personalities of the mentors. [Right?] So we need to be careful what kind of mentorship we are establishing. [Right?] So, 180 degrees is one of way doing it. So, here is the problem now. If the direction is... you are going in is right, 180 degrees is wrong. [Right?] But it is a creative technique. What you have to understand that creativity does not necessarily create end results. [Right?]"

But mostly schools and clients do not care about the process as much as the end product.

"They don't care only because they don't know what we do. They do not understand our process. You will have a situation, where a client would say to you, "Oh, that is simple, I could of done that." And the answer to that is, "Oh you did not do that. I did that!" And when you take out all your process work, that's why in our program we are trying to get you guys to show and demonstrate your process, because when you take it out, you say, "It was not just this, it was also these 100 ideas!" If you talk to people like we think, "Go and generate 100 ideas in less than 20 minutes." [You know... Okay?] And guess what? And that was just one that client sees. Or the three that clients sees, depending on the sales technique you used. So, the clients' perception of us is that you know, they just need to come up with this idea. It could be a great idea, but what is a big deal? They do not understand the process that we go through. [Right?]"

So it is our responsibility to make sure they understand.

"Its not our responsibility, but it is just easier if we bring them along for the ride. Rather than again... because that is the notion that we need to be a provider of the solution. Rather than, where an interdisciplinary comes in, it is a team scenario, where a client is very much part of the process. [Okay?] And you need to bring them along. That's why you provide things at the stages. [You know.] Instead of coming up with the idea, here it is! [You know.] It is.. bringing along is based on this. Oftentimes when I present work to the clients, I always talk to them and say, "Look at it, at this point. the decision does not have to be made, we are just tabling this discussion." Here is the thing, designers need to understand, that when I am with the client, when we present something, I want you to complain. I want to hear what you think about this thing. Because designers need that. They want that! Because I can hear what the problems are. But if you sit there and, "Oh, that's nice." In what way? I do not know whether it was good or not. If you got a problem with anything, please, I encourage you to take this apart. And I think this is part of the process to learn taking things part, not for the sake of taking things apart. They are given... [I guess...] I guess also art work... When we look at our own artwork as a filter to success. It is so personal, "Oh my God!" This is the hard thing with critiques. [Right?] Someone gets upset, "Oh my God, I've put so many hours in that!" [Right?] You've got to understand that those are just ideas and you are tabling them to discuss things. So, that's why discussion is a very important process within a creativity. [You know?[Whom is design is for? [Right?] How do you know you are on the right path? Or is there a path? You know."

Do you think students' creativity depends on the nature of the project?

"Students tend to be very... It is more complicated like this. I would say, you know, this energy you bring into the classroom. If the student does not like or somehow I am not connecting with them on some level or could be the personality they like or they don't like my teaching method or they don't like that kind of thing. And I know that, sometimes when you look at them and you go like, you know, you are trying to get them engaged, but they are just not engaging. It could be something... Maybe there is one thing I said they did not like, and the next thing you know... And it could happen very quickly. So, it could happen very quickly within the project. I remember I had one group, I asked them... there were two groups in the class, and I asked to go to Oakville to take a look at the store. And this was when the web was just new and develop the website for store that would not normally hire the designer to do a website. [Okay?] And one came up with a funeral home! And I said, "Great, now you need to go to that funeral home to interview somebody." I had such a resistance! And every time you are trying to pull out someone from the box, you are going to get resistance. So... I had such resistance, especially one of the team members was this girl, and it creeped her out. But once she bought into it, she came back, she says, "This was a great learning experience because I would never have done this. I would never have thought about doing that! But such a learning experience." So, any time we are trying to push people out of the box, into some different area, we will get resistance. [Right?] Our job is just to try get them through it. And hopefully they will come back. And that is when they come back to this, will reflect the process. So what was that? First of all they need to learn to release their work. After its done, so what did you learn from that? [Right?] So, they can reflect on. It is very important that they reflect the process at the end of the project that is not just something that have been handed in, we see in the presentation. Which I sort of hate. I hate presentations, by the way."

You are?

"You know, research presentations go into slipping some things, you got a couple of quotes, zap it into a pdf, put it up on the screen and start going through it. They haven't questioned anything, they haven't reflected on anything. They haven't gone any further because all their time has been taken up doing their presentation."

Exactly, that is the problem. Students are so preoccupied with designing it, concerned about the look of it that they forget about essential things.

"Yeah. What is the essence, what is the bigger picture, what are you really trying to achieve here? [Right?] So, you know, I identified that as a problem with a Workshop, [you know]. As the way they ensure they get to the milestones by getting people to do the presentation. No, no I want to have a grading component there, not a presentation. Because that ensures... I want to have a draft there, of your final piece. That ensures it gets done. Then I can tare it apart. [Right?] Or... Reflect on it! Sorry, not "tare it apart", "reflect on it"! Have them reflect on it. [Right?] Because it is also the way... So here is another thing, the coping organisms of how student are behaving within the institution as well. We have to understand that. You know. We talk about time management, we talk about the amount of courses. I think professors need to understand that you cannot be hiving so much work onto them that is impossible to achieve. [Okay?] You know that they are putting all their energy into their work to get a great mark, meanwhile this course over here suffered. [Okay?] So, I think as professors we need to know... So here is where I often have a problem with, a lot of these studies courses that are asking them to do brilliant research and great writing and asking to do a design project. Turning it into a practicum course! Those things are huge. Students always say that it takes an insane amount of work. Okay, so what are you affecting on other levels? In my course I'm looking out, "No wonder you could not get your stuff done." And the way students prioritize these things, that's why calendars are bad things, they look at it, "What do I have to do this week?"

...whatever is due first, I will do it first.

"[Right, eh? Right? And so, you know.] This is the model we have developed. [Okay?] And I think we are guilty of that to some respects. I am not saying to make it easier. There is more to communication process that need to happen in these courses. I need to know what someone else is doing there. When they are going to do? What are they doing? So I know, you are already teaching them that. You got something in-there, okay, then let me go and do something else! Or what can I do to support what you are doing. There is a growing... This harming thing that is happening is that professors are not sharing what there are doing with other colleagues. [Right?] And this is because... I don't know why. Maybe it has to do a lot of with who gets credit for that. It maybe that's what expands the university environment. I find it absolutely ludicrous. What is your body of work? To me this is fine artist approach, "what is your body of work? What is your credit?" thing. You know. All that. There is this growing thing of professors won't to share other people."

"You know, I have been on a curriculum committee since, oh God. I've been on it last year, and this year. This is my fourth time since the Joint Program, been on curriculum committee. I have been on the first one, when things got joined together. So I have been on several curriculum committees. [And... So, here is the thing.] I essentially developed a map of a curriculum. So, I took all the courses, I approached it from info design. What are they learning? What are the prerequisites? What are the core requisites? So, I mapped it out as an info design project. What are the streams? What laterally and vertically? Because course need to think not only about horizontal linkages, but what are the vertical linkages. The only way to have that is to have communication amongst those people. And for example, Xx Xx [name was removed for ethical reasons] wants to start Info Design 4. That basically was written to house... bringing all these disciplines. So if you done some video stuff, you do video, if you are an interactive person, then do interactive. It also would be under a lens of an Info design. Well, the problem with that is, she does not have the expertise to do something that is outside of her area. It is a multi-discipline, but she want to say, [you know, okay] if someone proposes interaction, she is basically on her own! Because it is not her area of expertise. And what I said to her... look at it, let us help you. Let us know what you are doing. We say, "Okay, Angela wants this to happen, then these skills need to be there. These abilities need to be there. So students can go and do what she wants them to do." But she does not want to share anything! You know, if we are having a hard time just dealing with an interactivity – is it going to be cell phone app or IPad app? Is it going to be something all together different? Is it going to be using PHP, my SQL is it going to be an interactive databases? Is it has something to do with processors? We don't know! All those tools are irrelevant, but you still need to know all those tools."

That is how institutions bring us up – we are very individualistic. We don't like sharing. Students want to have the best projects in class.

"You know what it is? It is also tenure promotion that forces people to you know... You've got to identify your contribution. So there is this mindset that I've got all those things in place that got to be mine. Identifiably mine! And the problem with that... Even though it continues on, what have you published? What projects are you working on? And after a while, it is sort of like, okay, what about just collaborating with people just to make great courses? [You know.] And the universities are under attack. Modern attack. It has been decided that you know, this is a problem. [You know...] One problem is that people, you turn around and say, "Why there is not enough energy has been put into the courses? Into teaching? What happened to teaching?" It is a cyclical thing, it is sort of a loop that no one knows how to bump out of. And you know. And here is the thing. At the college level, we have something that is called co-teaching where you are would be in classroom with me for a full semester and I will be teaching with you. And I've had a situation where, I developed a lot of 3D staff at York-Sheridan. And we have hired a sculptor. Great guy. He is now, I think, a head of department chair at the University of Buffalo. He had his class right beside mine at the same. And I said to him, "You know what? Why don't we share the resources? Why don't we even share our lectures? You are sculptor. You will lecture for an hour on sculpting. I will lecture for an hour on architecture. [Right?] Lets bring a more rewarding experience to the student." And what ended up happening was he also had class in the evening. They were also pissed off. So I had to come and lecture class in the evenings too because they felt they were ripped off! That was such a rewarding experience for everybody. [You know.] So, there is something to the model of co-teaching. I would say, that all first year graduate students, should be in co-teaching scenario and should not be turned into the course."

"It Is not always easy. I find that a lot of people who have taught at Sheridan and continue teaching at Sheridan. They all start off at co-teaching scenario. And they really appreciated that because it helps them to understand how to deal with that. Sometimes we bring professionals to teach. And I recall, we had one this... [You know.] We had that external assessment. You always have this one professional designer who is always saying, "Teachers are not teaching enough Typography" and blah-blah-blah-blah. And you know what? One year she came back after teaching for a year at George Brown and she says, "Now I get it." [Okay?] The fact that they are teaching these skills, they are teaching these things. It is just some of them are just not getting it, or not implementing it, or she was just frustrated as a teacher. So, it is not easy what we do. [You know.] But I always found that there is this feeling in co-teaching, that you are always kind of nervous, "Oh my God, I have to perform for this other professor or this teacher." But oftentimes, it is good even for the professor who may have learned something that he was not thinking about! [I don't know.] You know it is possible to do it is when you have two sections happening at the same time."

"So here the thing is. There is also a merit to understanding one single discipline. There is the merit to that too. I feel that in the undergrad level, there should be many different areas that you should try to explore and many different teaching methodologies that you should explore. That students can be exposed to different ways and approaches. You get students say, "I don't like this teacher. I don't like that teacher. I don't like this place." Listen, but you will learn from all of them. It is about what your teacher is doing to me. And often times, it does not mean putting typographer and typographer together, it does not mean that everyone would excel. It also does not mean everyone is going to like it. You automatically assume that. [You know.] But I think there is a room within the undergrad program to explore these kind of possibilities. It should be. Do I think every course should a collaborative course? Absolutely not. [Right?] So, what should be looked on is how one course can perform another course. [You know.] When we did our interactive courses that is how exactly we did that. How this does this help to understand this? How to do mapping? How to do Info Design? How to develop interface can help to move into something else? And we don't call it Web Design. Because that is just one medium. That is designing for the web. If we are talking about system thinking, you can be designing a protocol, you can be designing a procedure, that is the system. It has nothing to with that piece of technology because the technology is going to change. I mean, if we are still doing web design, how can anybody do a full map? You know what I am saying? You can think in term of I am doing web design, I am doing phone web design... And that is a problem with the computer scientists. Iphones, Ipads. You need to know what the next thing is going to be. How is that going to be? That is where design comes in. Design thinking or system thinking is about how we develop for users. How humans is in the center of all of it. For the thing to be interactive, you need a human. This thing is not interactive until you touch a button [pointing at MP3 recording device]. It is not even interactive if I decide to be silent. [Right?] [Okay?] Does it make sense?"

4.2.7 INTERVIEW 7

Design Professional, Educator
Schools Presented at the Interview:
Ontario College of Art and Design University (Toronto), Ryerson University (Toronto), York University-Sheridan College (Toronto), University of Western England (Bristol, UK)
(Interview length: 52 minutes)

Could you please introduce yourself?
"I am a professor of design at OCAD University in Toronto. I have been working with OCADU for the last 10 year. Part of that, I lived and worked in the UK. Where I worked with students at the University of Western England as a lecturer that is in Bristol. I have also worked for 12 years as a media designer and consultant to the entertainment industry mainly. I did a lot of work in a new foundational new media, and interaction design with a musician called Peter Gabriel. And started a number of companies and did a number of very large projects with him and his group."

Here in Canada?
"No it was in the UK. I worked and lived in the UK up until 2001 and then I came to Canada. And worked with the OCADU and also I have been since 2001 I have been a faculty member with Canadian Film Center Media lab. And I have also taught... I have given lectures at Ryerson University, at York University, and also taught at Sheridan College in their Joint Design Program."

That is where I went to for my undergrad.
"Did you? Oh, it is a very good school. And I was at the joint program that they have at York University. I taught there for a year in a thesis course. I've got a practice across a number of institutions."

My research is focused on using an interdisciplinary approach in design classroom to promote creativity.
"Can I ask you a question? Because most of my practice in the past few years were in graduate studies. Because we have recently developed and introduced a number of graduate programs at OCAD University. And I was responsible for designing and then directing an Interdisciplinary Program in Art, Media, and Design at OCADU. Also a new program which is launching in September, which is also an interdisciplinary program, called a Masters Program in Digital Futures. So, I really don't have any expertise at all at secondary or primary education. I can't comment in those area. My expertise entirely in post-secondary education and primarily in graduate education. I hope it would be helpful to you."

I am sure you taught undergraduate students.
"Oh yes, I've taught undergraduate students for many years. It is just I've taught graduate students for the past three years. That's okay? As long as it fits with the parameters of your study."

Yes, I am mainly looking at the undergraduate students. Since you have taught in various institutions, I wonder how an interdisciplinary method differs from one school to another.

"[You know.] That is a very good question. Yes, I think it does, But I don't know whether I could qualify it further to sort of say that there is a distinct style in teaching an interdisciplinarity from one intuitions to another. What I can say is that the different schools I have taught in. For instance, at OCADU which is my main institution. Because our focus is on Art and Design primarily, with a Liberal Studies which is playing sort of a supporting role to our practices that we do. Then, in terms of an interdsicplinarity, I would say, perhaps our focus is rather, I don't want to use a word "narrow", but perhaps circumscribed. Perhaps, more specifically to do with the intersections between art practice and design practice, and research methods and liberal arts, that visual cultures practices, etc. that we lay under the support of our students. So, an interdiscplinarity can mean a lot of different things. At OCAD University it primarily means the intersections between art and design and the liberal arts. On the other hand, working within the program at Sheridan, and perhaps at some of the programs at Sheridan and some universities at Western England, there is a little bit more of social sciences component to that. You may be bringing areas that we don't look so broad at OCAD University. Although, having said that, we are now looking at things like Health and Wellness, and Architecture, and Data Visualization, also a Mobile Communications, which is all branching off to the areas of the social sciences at OCAD University as well. [You know,] I think it is more to do with where the institution finds their main focus. And of course, the York-Sheridan is on design, it is not really on art. You know, where is at OCAD University is very much on art and design. And contrasting that with Canadian Film Centre Media Lab is a bit different too because they pretty much looking at the post-secondary training and professional practice. So, from an interdisciplinary point of view, we brought lots of business practices. The business practice was really important part of the bringing in design, bringing in the research methods, bringing in the collaborative methods, a very important part of it, but also business methods and research methods. You know, and research methods. [You know,] so it really depends on what sort of the main focus of the institution and program, is you are looking at, and all the sorts of outcomes you are looking for. So, if you are looking for professional outcomes like they are in the CFC Media Lab, they really are training people for to actually take their research projects out into the world and make them real. [You know,] or perhaps make them into a projects, where you can start the business, or you can start a practice, or have a validity in a public realm. Where is some of the work we do at OCAD University, particularly in our graduate programs, is a little bit more speculative, a little bit more theoretical, perhaps, a little bit less practical, and the outcomes are going to be not so necessarily geared towards business in the program I have been teaching in."

So many people go into academia after.

"Yes, many of them are going into academia, or going into their own practices or back into their own practices, which are primarily are arts space practices. So they may be showing in galleries, or maybe working in collaborative ways with artist-run centres, or they maybe [you know] going out and getting new research projects with grads. And things like that. So the interdsiciplinarity of it can be more speculative, perhaps more theoretical in nature, different mix of methods of doing research and coming to outcomes that are not so... are not necessarily oriented in practice-based outcomes. At least for the programs I have been teaching at, we also have very practical programs at OCAD University. And practical graduate programs as well. But this particular Interdisciplinary Masters that I have been directing is much more focused on the outcomes that are maybe speculative, maybe theoretical, and maybe grounded in art and design practice."

Sound similar to a graduate program at UofA.

"Yes, sounds a little bit more perhaps some sort of outcomes you get. They may have you know extenuating practicalities; they may have extensions to the real world applications. Certainly, we do not discourage that and we are very happy when students have that sort of outcomes. But we are also happy for research to sit in a theoretical space."

What are the main techniques and methodologies you use in your classroom to promote creativity?

"Yes, sure, first of all I will just let you know that one of my main focuses in teaching and I actually teach a course in this, is Collaborative Research Creation Methods. And I actually designed and taught the course to my graduate students in Creative Collaboration. So, and with the undergraduate students as well, I tend to do a lot of collaborative

projects with them. They may have [you know] tentative research outcomes or they may have really practical and applicable kind of outcomes. But what I do is I do ask students to work together whether they be in a two-person teams, or they are in larger teams depending on the scale of the project. Usually for sorter, quicker projects, I am really happy when students to work in two-persons teams, but for longer, more extended and more major projects, I am always interested, particularly in my new media courses, where you've got people who actually need to bring all sorts of expertise and skills to the project to work in larger groups. And with the Canadian Film Centre we actually don't just encourage that, we insist on it. In other words, you cannot actually do a major project at the Canadian Film Centre unless you work with a group of at least two, but preferably three to four. So, if you are not willing to participate as a collaborative member of the group, then you can't actually participate in the program.

So I have a few techniques that I use. One of my favourite ones is just to get people to meet each other and get an idea of firstly how to very quickly verbalize and layout and explain the concept that maybe interested in working on. And then secondly, to actually share that information with others and find others that they maybe interested working with. Is a technique I call "Speed dating." And it is exactly like "Speed dating" [you know]. I actually borrowed the idea from the speed dating, where people have basically a few minutes to sit down, meet each other, talk to each other. And one will start, and introduce themselves and talk about what they are interested in, and then their partner, they will switch, and their partner would do the exactly the same thing. And then everybody changes, and finds somebody else. And I actually do this with all my classes. And its what they find is, if they do one hour of an intensive speed-dating, where everybody has only three minutes to talk about their main idea, and why they think it is interesting, and what they hope to do with it. And by the end of the hour, because they have explained the idea maybe twenty times. They are very-very clear about it. And they get an opportunity to refine the opportunity as they go along. And also by the end of that session, people have a very clear idea whom they would like to work with. And often people have [you know], they come together as collaborators right after that session. So, literally, within one class, I can do a speed-dating session, and at the end of it, people will form their group because they know whom they want to work with. And its not just people say, "I want to work with you, you, and you!" Its people coming together, and saying, "We want to work together." It is not like being chosen by people, its like people immediately gravitate towards the people that have similar ideas, or who share conceptual approaches, whom they would like to work with. So, there are pros and cons to this. It can be really fast. And it can be very effective in particular helping people to clarify their own ideas. But what happens in the first instance, you would gravitate towards people who have similar ideas to you, or who have similar proposals or similar ways of working, or similar aspirations of the outcomes of their projects. That's good because it is really good to be working with people that you think you can work together with. After that, in order to make a strong group, what you have to do is you need to find people who have dissimilar skills to you, dissimilar approaches to you, dissimilar perhaps even aspirations to you because [you know] when you form groups and work in collaboration with people if you all do just the same thing, you wont form a strong group. Because you all going to be... [you know] you need people with adjacent skills or even opposites skills and approaches to you to make a strong group. You can all be doing the same thing, otherwise you wont have complimenting skills within a group. So, then I ask people to start looking at people and do the second round, to look at people who can compliment their group with skills that are not consistent with the [you know] perhaps first two founding individuals and their work partners. So, then we usually do another round and trying to see who can work with whom. So, you are not necessarily going for consensus, what you are going for, you are going for complimentary skills and approaches, and ideas in a collaborative group. And that works for small-scale projects, it works for larger scale projects.

The other thing I always ask people to do is to imagine themselves, groups to do, is to imagine themselves into a real world roles and responsibilities. And typically I layout, and I do that much more rigidly for the undergraduate students, than i do for the graduate students who have got perhaps more experience working in the real world or working in groups. I'll literally say, okay, for this project we are going to need a production manager, we are going to need an art director, we are going to need an editor, we are going to need somebody who is going to be in charge of technology, so a technology supervisor, we are going to need somebody who is going to take care of all the legal and practical matters and copyright matters and we are going to need a couple of people who just sit there and do the work. Or we are going to combine these roles and a number of people just to makes sure that everybody get s taste of actually having their hands in the project in some tangible ways. So I ask people self-select those roles and to assign those roles to each other and then actually very-very clearly write out and take on those roles and responsibilities by taking

the ownership of the responsibilities that come with those roles. They maybe a bit of overlap and where people can kind of help each other hand check up on each other, but you don't have two people who think they are doing, they got different jobs but they are doing exactly the same thing and then you end up with overlapping people, and people are missing out on things, and people disagreeing with each other because they don't know who is doing what and that sort of thing. So very clearly iterated roles and responsibilities within group collaborations I think are really-really important. And then at the end, giving people credit, where credit is used, being quiet clear who did what. Because it could be very difficult with the education and it can very contentious within groups to [you know] for people to really clearly... to be very clear about who did what, "This is part of the group, this is my individual responsibility, I made this contribution." [You know.] Especially if you've got projects that we've got at the Canadian Film Centre where projects become businesses. You have to be very clear about that because you don't want it to be murky who did what, who owns which part of lets say, a copyright agreement or a business agreement and who is responsible for what, when you actually take those projects out into the real world and make them businesses. So, credit, where credit is due. [You know.] So an appropriate division of labor as well as credit is very important too and being very clear, when people did not do what they say you are going to do, what happened there? [You know,] and taking responsibility for not doing what you said you are going to do. And then, at the end of these projects I always ask my students to do a self-evaluation. Which includes a very honest evaluation of their contribution, and whether the projects turned out the way they hoped, and what worked and what did not work. And then, a very candid peer evaluation too of everyone in the group and they share that together. And those are techniques I use in there. And they are kind of hard. They are tough, you have to be very honest, you have to be very truthful and agree to be open with each other. But I find that they work. And then people don't grumble away, saying, "Oh, well, I did all the work and she did not do any work. Or how do we get the same grade evaluation when she did so little and I did so much?" [You know,] to make sure that people really understand peer evaluation which they share with each other is open and candid."

But I think it is very hard for you to grade after since you get so much feedback from various students saying different things.
"You know what, if you pay attention and you work with your students, you know who is doing what. You really do. [You know.] I am very very rarely supervised by self-, peer-evaluations or self-evaluations that students give me. I very rarely find out something about I did not know about already. So [you know], it actually requires a lot of hands-on. [You know.] [We work in...] One of the great things of working in the institutions I worked in, we don't have these huge classes. We work in the studio, in small groups between 12 and 28 or so. [You know,] smaller graduate level and larger the undergraduate level. And you get to know all of your students and you really do know whether they have been working or not. And you really do know what contribution they made was, and if you get to know them well enough, you can actually see their contribution because you know their working style. You know their design style or their artistic style whatever. You really know who does what. But it does require a lot of attention from the teacher."

Do you think students' level of creativity varies depending on the nature of a project; for example, students are less creative if the project has specific constrains? Do you believe that students have the same potential level of creativity for any given design project?
"I can answer the last question with no. I don't think they do. I really think this question depends on at what levels students are at. So, I think in a very foundational level, say at the first year of the university, I really do think students require a lot of more constricted parameters at their projects, and I really make sure that they do have quiet constrained parameters. So they really do know what is expected of them, what the range of outcomes may be, and how much they can play within that and how much they can push against it. Because I think breaking the rules is fine, but you really need to understand what the rules are first. A lot of the [you know,] first and second year projects that I give to students are designed to help them to understand the rules and then start pushing against them as they become more sophisticated in their technique, in their conceptualization, in their research capabilities. Having said that, I always do give my students, even in the first year a really open project just because I want to see what they are going to do with it. The outcome could be almost anything. I say something, "We are going to design a toy." The toy could be for any age group, older children, or it could be for adults even! [You know.] It's got to have a certain amount of interactivity embedded in the design of the toy, but it can do anything you want. It could be a digital toy, it could be a physical toy, it could be an activity that results in the creation of an artifact. I always give them an open-ended project. Usually at the end of the term, so they can have a good open play with it and be very creative.

With students in the upper years, the design projects that I give them, the art projects that I give them are more and more open because I really want them to work towards their strengths, working towards their thesis projects. With [you know] graduate students, I will give them a very short, very specific parameter projects that are really things that we would do in just [like] one week. I give you a project – it is due next week. And those are really also, usually research projects that got fairly specific outcomes. [You know,] I want you to find out this week what you think the results of having a, putting in place different policies around the use of recycling in our institution. How that might actually affect student behavior and what the outcomes of that might be with a very specific focus on the use water or something like that. [You know.] So that can be very specific, lets get out research kind of jobs going, sort of like lets get our brains thinking around a particular topic. And then we'll see in what comes out from various directions and what we might get is a very quick outcome. But with a thesis work it is the opposite of that. It is like, what are you trying to figure out? What are your big questions? What are you interested in doing? How much time do you want to devote to this? Don't forget, you are going to spend the whole year on this. Its got to be something that you really want to learn about and find out about, what methods we are going to use. Then it is is [you know] very-very open. And I really believe the more the open project is, the more creativity students bring to it. But they have to learn first [you know]: what are their research methods are going to be? What is the main framework they might want to look at? If they are using something like Grand Theory approach, what is the main area of interest? And where do they think the problems, the constrains, or the difficulties, or the interesting gaps are? That sort of thing."

Do you incorporate an interdisciplinary approach in the classes you teach and can you provide a few examples?
"Well, [you know] I think I have almost answered that question for you actually with the way I have explained to you how I expect students in their projects to take on a very specific roles and responsibilities and also work outside of their are of expertise. So, I think this is really important. Obviously, it is important when you are working in the group to bring expertise to the table because that is extremely important. But as [you know,] we are teaching and learning, it is also important to actually work outside of your area of expertise, outside of your zone of comfort, and to learn how to actually take on other people's ideas, other people's methods even. Introducing an engineer into the mix, or a physicist, or a scientist, or a linguist or somebody who [you know] does not necessarily work within your discipline is a really good thing to do. So, I can give you an example of... Well, in Interdisciplinary Masters program, we have students coming from all different areas. I have students come from Physical Sciences, Physics, Chemistry, Biology, Computer Science, etc. So, I really do often get them to work with the student, at least on the initial project, that comes from another area completely [you know], an Interaction Design or a Painting even. [You know.] An area, where you would not think those two disciplines could work together. Maybe a need even spend quiet a lot of time just talking to each other to understand what those differences are a) in their approaches in terms of research design, and research methods, but also b) in their language. What do you mean when you say this? [You know] Why do I need to have my hypothesis in order to start my research. I figure it out by doing it! That's the way the sculptor might approach the project, where the scientist might say, but I really needs to... It is too big if I do that! I do figure things out as I do them, but I really need to be testing them against the hypothesis. That's how we work in the Physical Sciences. Putting those kind of individuals together can achieve really interesting results. And oftentimes, what seems to be conflicting research methods can pull out some really interesting results."

Do you think it is easier to bring exerts from outside than asking students to become "mini-experts" in other areas and research something that they have no idea what it is?
"Oh I do. But I think it is asking a bit too much at the beginning. So in all of my courses, I always bring in the experts from other areas that they might not know very much about. So I would bring in an expert in Robotics, or an expert in Computer Sciences, or an expert in coding of physical devices, or an expert who can teach them and show them how things are working in a mobile world. So, I would bring in experts, so the get people that they can talk to and go to. [You know] as examples of best practice too, I get them to show their work. So the students really do understand, so this thing is possible in this area. And I think this is really important. Otherwise, [you know] there is the whole world out there. So, depending on the project, you bring in appropriate experts to talk about their work and to show off their work and get some really good case studies. And so, if you don't do that, then you come up with their own cases studies of best practice or bring in really cool examples of work that you think are exemplary in that area, and you show it to your students. And you go over the case study and you say [you know], "Well, that is what they were

trying to figure out, this is how they have approached it, these are the research methods they have used, this is their research design, these are the iterations of that design, and this is what they came up with at the end!" And this is how it works! And [you know] get the students themselves to pull those pieces apart, so they can see tangibly how each step of that process works."

Can you describe the most recent class project of an interdisciplinary nature that was successful and if there were any challenges?
"Yes. Well, it would have to be one of my graduate classes and it would have to be my interdisciplinary class. So, in my interdisciplinary... it is called Interdisciplinary Studio Seminar, an Interdisciplinary Masters Program. No, sorry, in my Interdisciplinary Research and Collaboration Workshop, major collaborative research project, it's worth half, 40% of their mark. Its worth a great deal of mark. And the proposal for that worth 10%, so it's worth 50 percent of the mark. So, that project is very-very open. And they are starting with this "Speed Dating" and they decide to what they actually do together. And the outcome has to actually show in the exhibition of work, which they do at the end of the term. So, they work towards an exhibition of work or a demonstration of work [you know]. It does not have to be something that you put on the wall, but it could be. It could be a creative work, it could be a poster, [you know] that you might do in the research project. It could be a prototype that you show. And that [you know], we spend half the term working on that. They really start figuring out nearly at the beginning of the term, so they are involved in various overlapping projects. So it is always a successful project because it got hard delivery date and a hard outcome. And also [you know] that you would be showing your work not just to peers, but to the whole university because we have it at the graduate gallery. Everybody is going come and see what we did together. And yeah, I employ the techniques as I discussed with you earlier in our interview.

The challenges are... [Okay.] I think the challenges are with these collaborative projects, always are group dynamics, where you have, [you know] maybe you started off with the project which was really more of a one-person idea that everybody else's, but people have sort of bought into that. And of course, the idea changes. And it is very difficult to come in with the idea to let go of that idea and allow it to become not their idea, not their project anymore, but to be owned by the group. So the idea changes, [you know] and it must do that. But sometimes it is difficult for that, [maybe, for that] perhaps that person who is sort of a natural leader in the group or has a main idea that everybody coalesce around to let it go and let it change. It can also be tricky for others who have very strong ideas of their own, and projects that they are developing on their own because they always thing what their thesis project is going to be. They want to make sure that they do the work that actually going to help them to go towards that thesis project. This is the first year course, by the way, of a two-year program. So, [you know] you want to make sure that their needs and desires and their concerns are not lost in the overarching idea [you know], that is a specifically one-person's idea. So, they need to bring their concerns, and their approaches, and their interests, and their outcomes to the projects as well. And that could be hard to do. It is easier when you have two people working together. When you get three of four people working together, it could be really hard to do. So [you know] because everybody needs to able to be satisfied that they haven't spent a whole term working on the project that does not resignate for them, or did not help them in a way to get closer to their own objectives. So I think that's always a real tricky kind of challenge for the groups. So letting go as well as [you know] really kind of in a dynamic way confirming around the project that everybody can add something to and take something away from it that is important is really challenging. And I think that some students meet those challenges much better than others. Some of the most successful collaborations have been I think where two people came in with very strong ideas, and somehow figured out a way to kind of combine those ideas together into a new strong idea. In other words, it was not one idea or the other. And neither was a some sort of hybrid of those ideas, but it could be a hybrid of those ideas, but it probably that something that arises out of their interests that they then create as a new project together that they all agree on. So we have had [you know] students who were really interested in, I can give you one specific example, one student who was working in the animal studies, and really interested in the relationships between human beings and animals, and another student who was working in graphic design studies, but was interested in the effects of texture, objects, and also, particularly interested in a camouflage. And how were these two people going to work together? Well, what they ended up created... Oh, and they were both interested in re-use of the materials: re-purposing and re-using the materials. So, what they have created out of these [you know] quiet separate interests, but the fact they wanted to make something physical, they both wanted to do that they could show that had some sort of emotional content to it that re-used materials. And they

also had handwork in it. They were both interested in making something with their hands. Really making something. They found and they collected the animal skins from the old fur coats over the whole period of time and then they have created an enormous blanket that was based on a Canadian Army camouflage design that they have created for the soldiers that were going to Afghanistan. So, it is an actual Canadian camo- design and they translated that into a big blanked that they then saw by hand that they made out of these furs. And it was a beautiful, beautiful project! And it took hours and hours to do. They would always bring the blanket to the lectures and they would be sawing together."

This sounds really cool!

"Yes, and it satisfied all their interests and all of their desires. And what they had at the end was this beautiful thing that they have hung up on the wall... No, actually, they lay it over bed. And was then, it was something that was bough by one of the design museums as a sort of [you know] a modern Canadian artifact. There is an example of how people with really quiet divergent interests can work together and make something together that actually as a collaboration was highly successful."

It was obviously successful in large part because you directed people towards the outcome.

"Perhaps, but as I said the outcome was very open. Its just you need to have something that you can show at our exhibition at the end of the year that satisfies your needs and desires in terms of own research interests and outcomes. And you have to collaborate on this together and you really do. And neither of them when they went to this though they going to make a fur blanket! Out of camouflage design and recycled fur coats, but that's what they did. And obviously we were very supportive. I team-teach this course by the way. I should tell you that. I team-teach this course with a colleague, whose name is Jeffrey Shay. And one of the reasons we team-teach it is because we want to provide a model of collaboration for the students in the teaching of the course. So we take different part of it, and we do things together and we do things separately. And that's how we are providing a collaborative model in the studio classes as well."

4.2.8 INTERVIEW 8

Design Professional, Educator
Schools Presented in the Interview: MacEwan University, University of Alberta (Edmonton)
(Interview length: 48 minutes)

Introduce yourself.
"I am an instructor in Design Program at MacEwan University in Edmonton. I am the chair of the program, but I have started as a chair in July, so I am new to this position. I am relatively new to MacEwan, I have been there for two years. And this is my first full-time faculty position at the university. I used to teach part-time in this program. Trying to think how long ago now, probably five years ago? And I have taught various classes in the course of seven years. Mostly, design 490, which I think has been split into 492 and 493. It is a core 6-credit course. So I taught that and a couple of interface design courses, like HTML and Flash course here. The stuff that I teach at MacEwan is primarily digital media. And as far as the industry experience goes, I was a team supervisor at NAIT for three years. And I totally redesigned their entire public-facing website. I had a team of... I was part of the team of three when I started, and by the time I left we were seven. So it was a huge growth and a huge amount of work, and that site is done very well."

And their branding looks pretty good too.
"It was an external company who did that. But it was also part of our job implementing that new brand and figuring out how that brand would work on the web and stuff. And prior to that I worked in the Faculty of Medicine, here at the university {clarification: University of Alberta} building educational learning tools. And while I was doing that, I came here and did my Masters, and before I did that, I did my undergraduate here. So I graduated from my Masters program in 2005 and I think I graduated from the undergraduates in 2000. So, I have... unfortunately pretty narrow perspective of design because it is primarily situated in Edmonton."

Does an interdisciplinary approach vary from school to school?
"Can I pose question back to you? Or maybe you re going to turn it back to me. How do you define an interdisciplinary?"

What I mean by that, lets say students have project to work on at the university. And what we usually ask students to do is to become experts in a certain area or discipline. For example, they need to design a logo for a Department of Medicine. So, instead of becoming a mini expert, which is hardly possible, wouldn't it be easier to involve that department in the project. So I am thinking of designers working within the walls, and designer working within a bubble in many schools that actually claim that they are an interdisciplinary. Is till don't see it happening.
"So, I want to say yes, my experience here is I see this as a very interdisciplinary program. At least it's taught about, and encouraged in whatever practical like people and experts from within the industry like design industry but also from other disciplines are brought into the classrooms to talk about things and to give feedback on things. I think that happens less than we would like to have happened in the Grant MacEwan. There are few reasons for that. I think we would like to do it more. We are situated in the campus that is at the west end of the city. So it is not in downtown campus. It is the place that is called Center for the Arts and Communications. So it is a smaller satellite campus. And within that campus there are the Ending of the Journalism Program, and a Professional Writing Program that

is now becoming a Bachelors of Communication Studies Program. There is Theatre, there is Music, [oh what else is there] there is Arts Culture Management Program. There is... I am definitely forgetting something here, but I can send it to you later. But there is a whole bunch of Arts and Communications Programs. So, it is in some way taking the Fine Arts Building here {clarification: University of Alberta} and situating it at another location all together. So we are off the main campus. So it presents challenges. I would like to see more interactions between different disciplines at the MacEwan or even at the university. So that presents a challenge. But I think one thing we are really strong in, is getting industry to involve in the program and inviting people form a graphic design community to come in, and that may not strictly be an interdisciplinary. I try whenever I can to bring people in. I had a class today where we are working on a website for a personal fitness studio. So we have a mock plan. This is a guy who owns a fitness studio. We are actually not going to build a website for him, but he is willing to come in and pretend that we are going to build a website for him. So, students get an opportunity to interact with a potential client and the person who is an expert in personal fitness studio, and how that business gets to run, and things like that. I do enough work with students upfront to try to get them to understand a little bit about that industry and what designer should do to kind of get up to speed, so they can have an intelligent conversation with this client. So the client isn't really talking about really basic mundane things like [you know], this is what my business is, and that's where I am situated, and things like that. So we can have a higher level of discourse. Other things that I am doing are also connected with work with others programs that are on our campus, that kind of feed in with what they are trying to do and what we are trying to do. Which is sometimes kind of hard because it is kind of limited, and I know that other instructors are doing the same. So, in the illustration major that we have, they do a lot of co-creation design, and imprint design, and things like that. And they work with students in Bachelors of Communications or Professional Writing Program, where they generate stories and creative content. And then the design students are partnered up with one of those students and they create a book or a magazine based on that and the design students have to interpret visuals or a poem. And some things that I am doing, one project for example, that I did last year for the first time with my students in the Digital Media building the websites on their own, was partnering up with Arts and Cultural Management students. And one of the things that Arts and Cultural Management students do, are working on the marketing project for art and culture organizations that they pretend is their hornet. So what they do, they put together a business plan, a communication strategy, or how they want that organization to release the event that they have, so maybe that organization is stuck with one-time event. So, [you know] for example it could be, there is a café called the Artery, and they have musical acts throughout the year. So, that might be a business plan communication strategy for the Artery or it could be on one specific event. Edmonton has a festival called "Deep Freeze" Festival that happens in February, so they might build a communication strategy around that particular event. So all their students have unique plans and unique organizations they work on and their instructors are helping them with those. And many of them want to do an online presence that is somehow connected to that communication strategy. So I get my students to meet with their students. They partner up and everybody has gotten a different project. And they have to interview their client and they have to understand the demands and the requirements of their clients. And it is relatively safe, and harmless situation [you know], there is no money being exchanged and they are not going to loose their job and things like that. And it was the first time we did it [you know] and there were boxes on the road but any other things were pretty good, and both instructors – myself and this other instructor want to continue trying to do it again and work on that.

And there is a new opportunity that came up with marketing students in the Business program. And this is new and it is going to happen this term. And I don't have many details about it yet, but I have to lure my students into doing that and we will see how it goes. I am always looking for way to connect as opposed to [you know] designing in a vacuum, and this is sometimes a horrible experience. Because [you know] sometimes students don't by in what the instructor has to say. They understand to a certain degree when you ask for credibility, but they also want to experience things for themselves. And they need to experience things for themselves to understand things better! I don't know if I have answered your question."

Oh, yes for sure! But do you think students are more enthusiastic working on these kind of projects as opposed to artificially-designed projects. From your own experience, do you think they are more excited working on these kind of projects?
"Yes and no because I think that the initial reaction is... how should I say this, there is a big opportunity for them to fail there if they don't please or satisfy the demand of a client. Because sometime the client might have stronger

demands that maybe their instructor does. Maybe their instructor is a little bit more forging and understanding of where they are. But perhaps client is more somehow, in their mind they think, "Perhaps, I am going to be exposed. I'm not a good designer. And perhaps my instructor is pushing me along and propping me up. And maybe I would be exposed for the phony I really am." But I think, once they amerce themselves in that, I see a change really fast that they really do appreciate it. And I think wherever the more realistic the scenario is, the better the output tends to be. I am relatively new to doing this, so it could be part of what I need to, [how do I say this?] to calibrate my own expectations and how I grade projects like that and how I provide constructive feedback and things like that. Because I still think it needs to be situated in the educational context and it needs to be creative, and things like that. Just to complete something cannot be the only measure of success. [And you know,] client being happy is not the only measure of success. That is where I sometimes have a little bit of a challenge with. This is a completely wide-open real-client situation. Another part that I have struggle with, I want to look for those opportunities, but I am also conscious of taking work away from practicing designers, and the industry associations and even with people in our own institution. We might have a design studio, or we might have web design and development studio in our own institution and I could be doing something that does really work for them and people are getting laid of or not getting paid. So I don't really want to compete in the situation like that. So I think there is a huge opportunity with non-profits. And that is something again that we are working on."

Yes. It could be tricky as well because you don't want organizations to exploit students.

"So yes, I don't want students to be taken advantage of. So I do a lot of the mock situations, where I tap in my own experiences as a designer. And I will get approval from people who are friends of mine who own business and things like that. And I will, for example, take content that they are allowing me to use from an old version of their website or the website, just give them... gives students the whole amount of text. Here we got a client and they've got text, they have written it. Your task here is to organize it, create and architecture and hierarchy to all the information. Find the visuals that are appropriate and that kind of stuff. I might change all the names of the people involved and I might change the name of a company and make up a logo. Then I have... it is sort of a controlled experiment – I know the parameters of the projects and I know what they can do with it and what they can't do with it and where they are headed and things like that. I like those situations. I think students like it. But whenever there is a real person in the room, they always ask for the situation that is more like that. I want to do more of that, I want clients or want to interact with a client, because I know after I graduate I got to talk to people and its not just... [you know]"

It is a pity when students don't get a chance to interact with a client before they enter a real world. These kind of projects obviously require more work from the teachers...

"Yes that is the other element. Sometimes clients have very tight deadlines, "I need this next month." Then its like, well we are going to end the project t hat we are working on in three weeks, so how does it we start it up? And sometimes... it is sort of like an advanced planning. To make it sustainable, I think, it's kind of got to be an event or activity that occurs every year. I know some projects in this program "International Week". It is an event that happens every fall, I think, here on campus. They always take the international week of identity into senior classes here. You guys create an identity for us and that kind of stuff. I see a number of projects in this program that do similar kind of stuff. They have people to come in and talk and that kind of stuff, and studio theatre stuff..."

How do you generally promote creativity in the classes you teach? You walk into the class and you need them to be creative, how do you make a magic happen?

"I don't know. It is something that I struggle with as an instructor. I don't necessarily see myself as a creative person, but I am not as creative as other designers. I see different types... I think there are different types of the spectrum. There are designers who are on the artsy side of the spectrum and there are designers whoa re on the rational side of the spectrum, and there are individuals in-between. I find that I myself tend to fall on the rational side of that continuum and I think design over the years has distinguished itself from the fine arts. [Right?] And I think when of graphic arts back in its day, it was closer tighten to the fine arts. And the thing that is making us distinct from other discipline is the rational side of things. So, his is what I personally struggle as a designer a lot or as an instructor in the design program a lot, I tend to really fall on a rational side of things. When I am in web design classes, I talk a lot

about things like architecture, and process, and I talk a lot about business processes as well as design process, the creative process is part of that. So [you know] I preferably need to find a way to loosen up a little bit. I am sure my students think that I am a little bit dry, but I am hoping that and I know that there are other instructors that they are exposed to that are more on a creative side of things."

But I also think it depends on the class because that class is pretty technical...

"Yes, yes. So, that does not mean that I do not promote creativity and other things that I use in my classes are the tools that I have learned here from Bonnie in teaching 490 and things like that. Mind mapping, and writing things out, and sketching. I've been following a process. [You know, I always...] The big thing that I am trying to communicate to my students that a big ball of lightning is not going to hit you out of the sky, then suddenly you have a creative inspiration that often creativity is hard. You can get designers blog just like writers blog, and the process is a really important part of it. But then, I think I need to do some far out things to just sort of shake things up a little bit. And, I am still I am still developing as an instructor..."

...we all do.

"I am conscious of a fact that I need to do that. I am steel sort of gaining my feet, getting comfortable with the material that I have to deliver. I need to sometimes throw bombs into the classroom and start shaking things up. I don't know yet how to do that and I haven't started incorporating that yet. And that is on a high list of things to do."

Do you think the nature of the projects dictates the level of creativity?

"Yes. I think it depends on the learning objective that you are trying to get out and the end result of the project. It might be, I want to design a website for a band. Part of that is that they want to apply identity from their CD packaging to their website. Packages as a website does not exist. You need to maintain consistency, but other than that, the sky is a limit. That is a fairly creative in that regard. But I might be talking to another class to a form design. You got to make a form, you got to make it readable, its got to function in this way, its got to do these things. Its got to be easy to read, easy to fill in, makes sense and that kind of stuff. There is a certain amount of creativity, but there is so much that you can do in the form before creativity starts to go overboard and [you know] starts to loose its purpose. It has to be functional."

What is creativity to you, how do you measure it? How do mark it? How do you explain to your students that the project was not creative enough?

"Somewhere in our program, we are going through some exercise. MacEwan is interesting because we have a pretty rigid academic requirements within the institution. And [you know] you have various levels of curriculum committee and things like that. One of the feedbacks that we've got a while back is that our evaluation methods were inconsistent. Some people were highly subjective, where they get the project and they looks at it and go, "A+!" Wow, this is really good, but maybe you should have done this and that. And other people [you know] they have a rubric, and they said [you know], "These are the learning objectives of the projects. According to these five elements of the learning objectives, you can either be excellent, outstanding, satisfactory and so on." And for each intersection they had a detailed description of what that was. But hose are polar opposites, and was all over the place in the program. And that was the feedback and one curriculum member said, "You guys need to standardize the way you are doing things." So now we have five elements that use as guidelines for the instructors when they are grading. There is a technical component, there is a conceptual component, [I am not sure if I am going to remember all of them now] there is a presentation component, there is a formal component, which is really addressing a visual design...

...research component?

"That kind of fits under conceptual component. I don't think creativity is one of them, but its something similar..."

...innovation, exploration?

"Yes. So this is kind of how we control. In some ways we are less subjective than we may have been in the past. So,

we are kind of standardizing and trying to make it as similar as possible across classes. And those five elements are guidelines that can be used in different percentages. So, even in our computer class, we may use those five things. It might be this exercise is highly technical. So the heavier percentage would be on technical element. Where is in another class, it might be more on the conceptual side of things and less on how well it is executed and how proficient it is, something like that. So we are switching variables and percentages."

It is great that you have this consistency in your school. I find it is difficult without having consistency at the Fundamentals class that I teach here at UofA, all teachers have their own grading criteria...
"Yes. You want some consistency! Well, I think there is this human factor to all this too. And how one individual interprets those five criteria versus another person. And to a certain degree that is okay. But I don't know. When it comes to creativity, I think, I am... I have been around long enough to know... I probably have a reputation of a high marker. I started off with pretty high expectations, and I think when I am pretty impressed by something and there is a certain "Wow" visual that I see, that is when I star to give out A and A+ range for the creativity side of things. Because there is a surprise factor [You know]. Oh that was really unexpected. I think it is kind of like... it is hard to describe, it is something that I don't think you necessarily can put into words. Its is kind of like... defies description in some sort of way. The person can do all the things expected of them to get an A. And then suddenly, you have done all those things, but this is awesome from the visual communications design standpoint it is outstanding. So it puts you into a new level."

I don't remember the exact quote, but this person said that "We know creativity once we see it." By looking at a certain project we say, "Yes, this is creative" or "Not, this is not creative". However, we still need to explain and verbalize this to students.
"That in some ways... I can't think of any other discipline on campus that functions that way. [Right? You know.] The industrial design sort of fits in the same category and things like that. But you don't see that in science, you don't see it in math. There are maybe more creative ways to solve a problem using mathematical approach, and there might be different ways to arriving to the same result, but the result ultimately is quantifiable. But with us, there are 20 students and there are 20 solutions to the problem."

And that is a problem, no one takes design seriously because it still largely falls under fine arts. So having the criteria should definitely help.
"Yes, I think it should totally be transparent and upfront. The students [you know] very early on should get, even at the beginning at the project, here is your grade sheet, here is project sheet. This is how it is going to be graded."

Can you describe a recent in-class project of an interdisciplinary nature that was successful?
"I have lots..."

Yes, like the fitness project you have described.
"I am trying to think whether I would qualify that as I success or semi-success. I am trying to think of something better that I have done. I thin the marketing, sorry the Arts and Cultural Management one, could have been a way better than it was. I think a lot of the success or failure depends of the parameters instructors in both situations. Because those are two different sets of students that were put together. And I think I did a pretty decent job setting up parameters for my students but it was not clear to me whether that instructor on the other side has set up parameters very well for his students. And that is something that I want to work on in that regard. I think, probably, the fitness site worked reasonably the first time around. I have... so I did this last year at this time of the year and I am doing it this year. In fact, I had a client coming to my class today. So, that is working reasonably well. Why is it working well? How is it working well? So, I don't want to waste client's time much. So I am trying to do a little bit work with students upfront. So, I am trying to get them into a positioned. So when they do meet the client, they are informed and they are going to ask them questions. It is kind of like any designer that has been to practice for a while going into the situation that is beyond sort of going to meeting, showing portfolio and asking for work. I think, once you have committed to a project. Most designers themselves are going to research about the client before they go and talk to the client and the industry. So, they sound informed of the industry. So, I do some prep-work with them

to get them informed of the client, their business, not so much of the industry. I kind of get them to do a little bit of the research on their own. But the person's web-presence. So, this is a re-design project, so there is already existing website. So I get them to look at it. And it is a carefully controlled situation too. This is a studio that is situated a very specific location in Edmonton. That is a fairly affluent community. It is not s downtown situation, where anybody in the city is going. It is really localized to a certain area, so the parameters are pretty controlled. And I think this is part of success of it. So I get them to do a demographic research of that particular area. And trying to find out who are the people in that area, are they mostly women or they are mostly men? What are the age groups? Are they single or they have kids? Are they retired? What is the average income? Things like that. So they get a sense of that. And there is a stereotype about this community that is very affluent and that everyone has big houses and people make lost of money. But I think it helps to check those stereotypes. But they know that, and I also give them bunch of Google Analytics reports on the website over the course of the year. So they can get look at the current website and compare it to what has happened over the course of a year. And they can start part some information from the Google Analytics and say, oh there are interesting things that are going on the website that I need to ask a client about or star to figure out why these things are happening. And I also get client to fill in the client survey. And that is [you know,] something that designers do face to face with a client. But I have set this up, so the client does this in advance. So answers a bunch of questions. They are kind of rudimentary questions about the company and what they hope to achieve with a new website and what are their marketing plans and strategies for what hey have been doing. So they have a pretty good background before they meet the client. And now, what I am getting them to do with this client is to present back to the client about their company. This is what I have learned, this is what I understand about your company, I get them to present some site audits, so they have looked at other competitors' websites and the websites that are similar ones. And present back to them ad say, "Here is how I might approach the redesign of this and here is how the changes I am putting in, might affect it." Without doing any design yet, but just sort of [you know] doing the discovery phase of development. And so is the reaction from students, "Why am I doing this? The client already knows about their business, so why am I telling them about their business again?" And I try to say to them because the client wants assurance and trust that you know what you are talking about. It is not just a crap-shoot, here is your 2000 dollars, here, make a website for me. And don't waste your time designing things that's where you get paid. So, I think quiet a few of them came around today when I've met with a client and asked, "What do you expect from design at this stage?" And he said, "I want them to build trust and confidence in my decision of why I am hiring them." So, that's pretty success on that front. It was maybe a little bit less successful last year because it was the first time I have done it and I was not sure what to expect and how to position things and [you know] predict where things are going to go right and where they are going to go wrong. This year, second time around, they would head that off. And now they are going to go around the mock-ups, and the final designs and the client is going to come back and they gonna have to pitch."

So how often does the client need to come to class?

"Twice. So, it is kind of, they have done some prep work. So it is an initial meeting for what I think, the intelligent questions, so no "How many years have you been to business?" So they are asking pretty challenging questions. Or the students are. And the final deliverable, where I coach them, I direct them through a mock-up stage and the final would be [you know], "Okay, Mr. Client here is what I am presenting to you and pitching to you."

Does client provide feedback as well?

"Yes. So, that's a great thing about this client that he pulls not punches. He is honest. So, if you are rambling at the presentation, he is type of guy who is going to say, "Hold on, I have no idea what you are saying!" And the students would blush and totally use their train of though. And it is great to have client like that. The problem is... There is nothing in really for him. He is not going to get design out of it, he is not prepared to take it beyond a two-day commitment to actually work with the student and implement this into a website. I think, he sees himself as contributing to the education and the students. So there is, what I would call, a moral obligation. It is sort of a moral or an ethical thing that he is doing contributing to the education. And he is not really a friend of mine, so he is not doing it as a favour to me. I think in some way he likes it because he gets new ideas to put in to his website. So [you know], they would point out flaws in his website, so he would go on and change it. He would make his own changes, so he is not steeling their ideas. And [you know], I help him on consultant level, so it is my time as well, but it is not a

lot of time in return. But I am conscious of the sustainability, Any year he might say, "No, I can't do it, I am too busy." And what am I going to do? So, that's is the only challenge I think with the projects of that nature – the sustainability from year to year."

If he is going to say "no, then next year someone new will appear.
"I think I am fairly new, so a lot of people don't know that I exist and they are not coming to me with a lot of work they I would like to see. It may have been the by-product of past faculty members in our program that might of said, "No, I don't have time for this." And that may have shied people away. And there is a future impression that [I don't know] MacEwan instructors don't want to work with the industry. So, but I have had many conversations with Lemington and GDC and they all want to partner up with students. We want to try to find ways for practicing designers to collaborate. So, I think there is a lot of interest out there. But coming back again to, it is still a lot of work for me."

It is really important for students to work with real clients. But again, you probably would not do it with first year or second year students.
"We only have a three-year diploma. They are entering their final year. I would not do it with younger ones.

There is a studio in town. I am not going to give out its name, but you probably will figure it out. Its not a design studio. They are partially a design studio and they are partially an educational studio. And one of the things they do they get real clients and they collect the tuition from the clients and the students do the work for the client and client gets work from the students at the end. There is a really great growing opportunity for the students, but I find it is ethnically questionable. Students pay a lot of money to go an bee at this environment, so the studio I am talking about collect the tuition from students, and I think they also collect design fees from the client, but I am not sure about that. There is an ethical terrain and I am personally very uncomfortable with this, but I think the GDC, for example, they have sort of have ethical guidelines. Working on spec, and pro-bono work and stuff and I think we should really pay close attention to that."

Well, it is part of our design job.
"Yes."

Appendix 4.3 [A]
Recruitment Posters

Testing A:

HOW DOES IT WORK?

$300,000+ PROJECT:

WHAT?

WHO?

WHY?

WHEN?

WHERE?

Testing B:

HOW DOES IT WORK?

SHARING PROJECT:

Master of Design Thesis Research in collaboration with Senior Association of Greater Edmonton

WHAT?

WHO?

WHY?

WHEN?

WHERE?

Testing C:

DARE TO SHARE PROJECT:

Master of Design Thesis Research in collaboration with Campus Food Bank at the University of Alberta

WHAT?
Create a poster campaign for Campus Food Bank

WHO?
VCD/Design Fundamentals students (You!)

WHY?
- Draw, paint, design, and be creative
- Help students in need
- Get published
  (your work will be distributed throughout the city, presented on the UofA Food Bank website and partner sites)
- Create a strong portfolio piece
- Be part of a collaborative exhibit
- Establish new connections and get references

WHEN?
Wed | FEB 1 at 6:30 pm | intro session
Wed | FEB 15 at 6:30 pm | process session
Wed | FEB 29 at 6:30 pm | optional session
Wed | MAR 7 at 6:30 pm | final session

WHERE?
HUB 167 (HUB studios)

Hope to see you there!

Appendix 4.3 [B]
Testing A/ Consent Forms (Collaborators)

300,000+ PROJECT: HOW DOES IT WORK? EcoCar Sustainable Vehicle
Promoting Creativity in Design Education: Exploring An Interdisciplinary Approach
Consent Form for Collaborators to Participate in Workshop

Introduction

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You, as a collaborator, should benefit from the process and final outcome by sharing your discipline-related knowledge with participants and generating new ideas that can be further utilized in your project.

Your Participation

Your role in this workshop is to actively collaborate with the participants and the researcher. You will be asked to conduct an introductory session, where you will introduce the project brief to a group of participants. With your permission, I will ask for a copy of a brief for further study. Your brief might be displayed in my final MDes exhibit, and in any thesis-related papers and presentations.

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Appendix 4.3 [B]
Testing A: Consent Forms (Students)

300,000+ PROJECT: HOW DOES IT WORK? EcoCar Sustainable Vehicle
Promoting Creativity in Design Education: Exploring An Interdisciplinary Approach
Consent Form for Students to Participate in Workshop

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Your Participation

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There will be two sessions: the first one will introduce the project and the second one will conclude it. Both sessions will be approximately 30 minutes long and will be photographed, but you may opt out of these. All digital photographs will be stored in a secure place. If the information collected is quoted or utilized in an MDes thesis report your anonymity will be maintained.

You will also be asked to answer a questionnaire in the second session, which will summarize your feedback and reflect you experiences.

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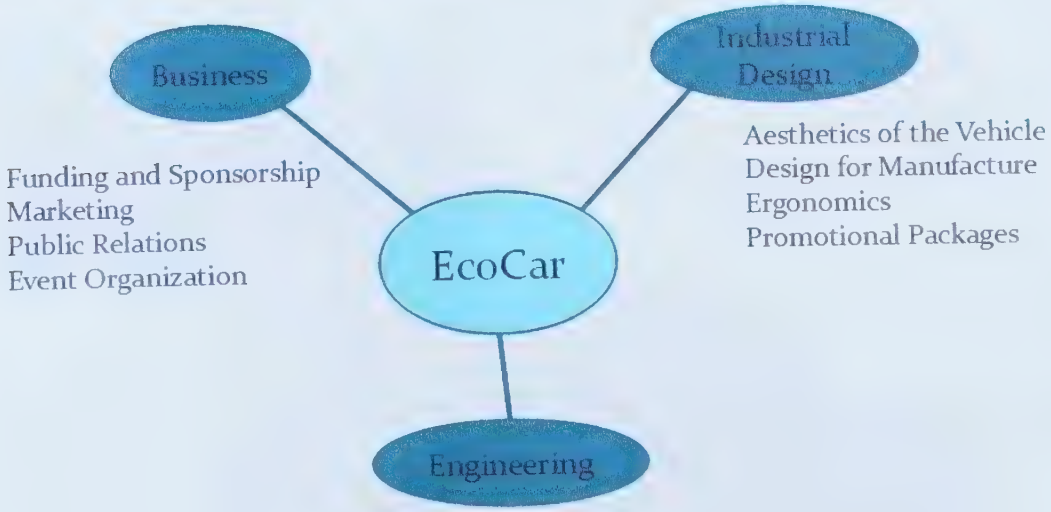
Appendix 4.3 [C]
Testing A: Presentation

Collaborators Presentation:

About the Team

Interdisciplinary student project
Collaboration between academia and industry
Promote sustainability and innovation
Design and build in-house

Team Structure



Funding and Sponsorship
Marketing
Public Relations
Event Organization

Aesthetics of the Vehicle
Design for Manufacture
Ergonomics
Promotional Packages

Mechanical and Structural Design
Electrical and Control Design

Mission

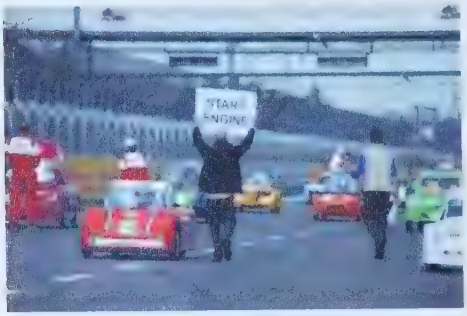
To push the limits of alternative energy technology by developing a zero emission vehicle and promoting environmental awareness and sustainability through international competitions, education and outreach, and our community involvement.

Where do we Fit?

-Student Project
Design and Build
Education and Outreach

What Races?

Shell Eco-Marathon:
Houston, TX



Global Green Challenge:
Australia

Shell Eco Marathon

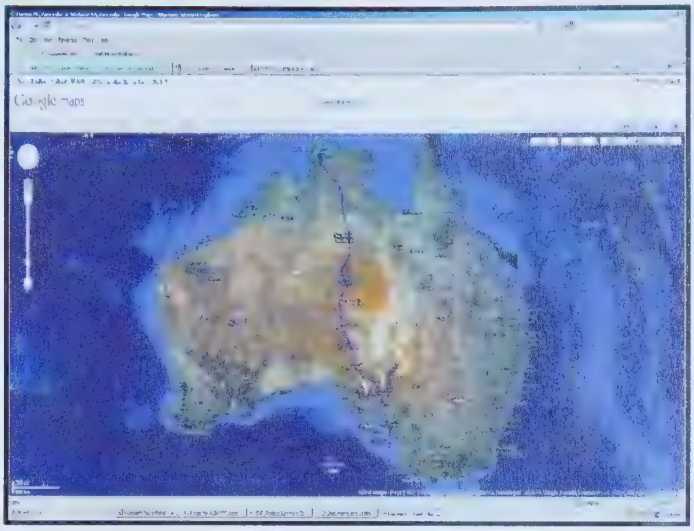
Competition for students across North America

Urban Concept Vehicle Specs:

- 205 kg max
- steering wheel, signal lights, mirrors
- 4 wheels

World Eco Challenge

International environmentally friendly vehicle race



Our Vehicle

Technologies

Hemp Fiber

Vehicle to Grid

Fuel Cell

Vision/Goals

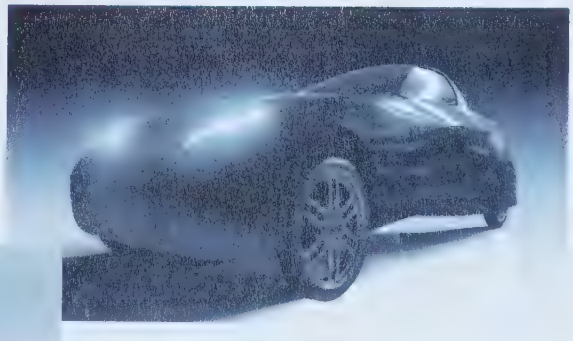
- Create a first generation vehicle to successfully compete at the Shell Eco-Marathon in 2012

- Add momentum to the alternate vehicle technologies movement and prove it is a feasible concept

- Explore sustainable solutions to the problems we are faced with in the transportation industry

- Bring together students with a passion for innovation and design

We are looking forward to discussing further opportunities with you and would like to thank you for the opportunity to discuss them today.

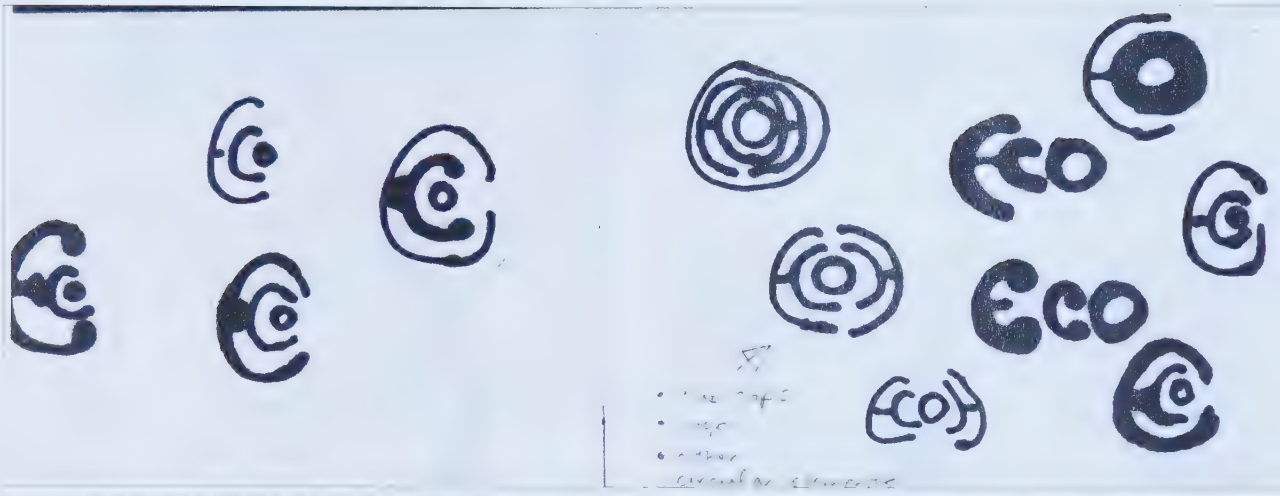


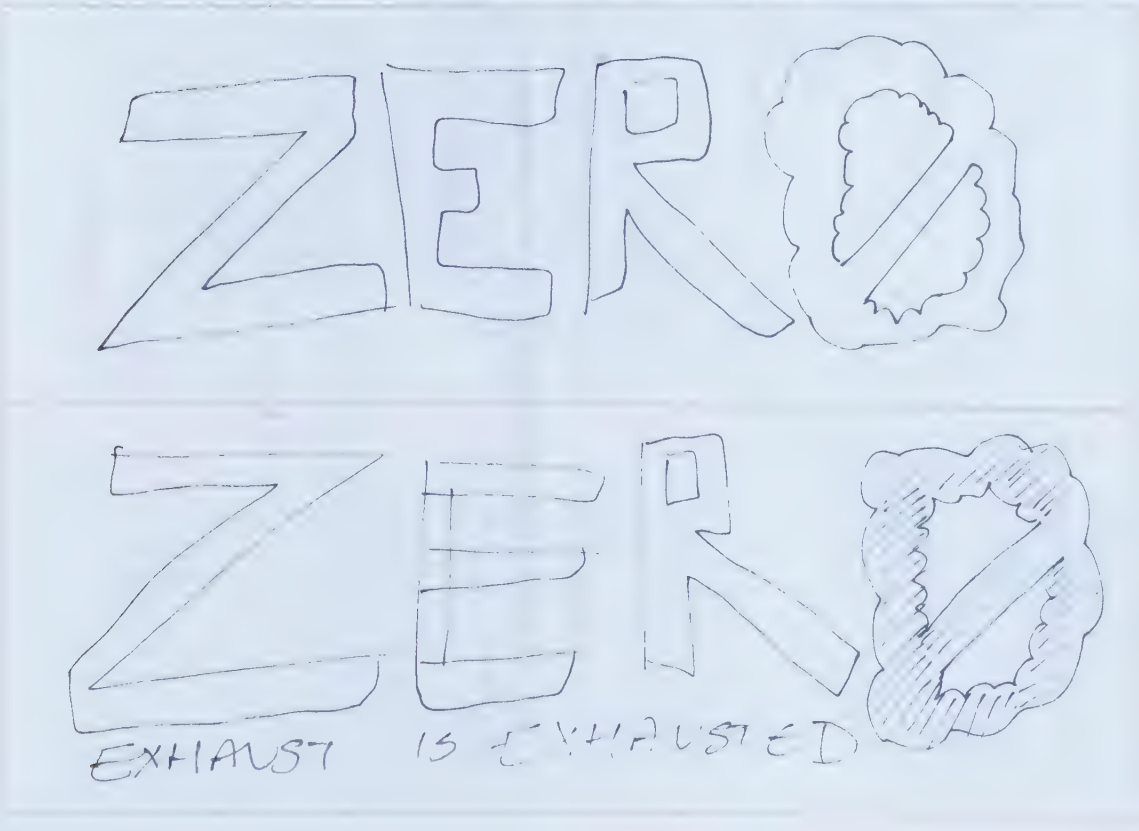
For more info visit www.ualberta-ecocar.ca

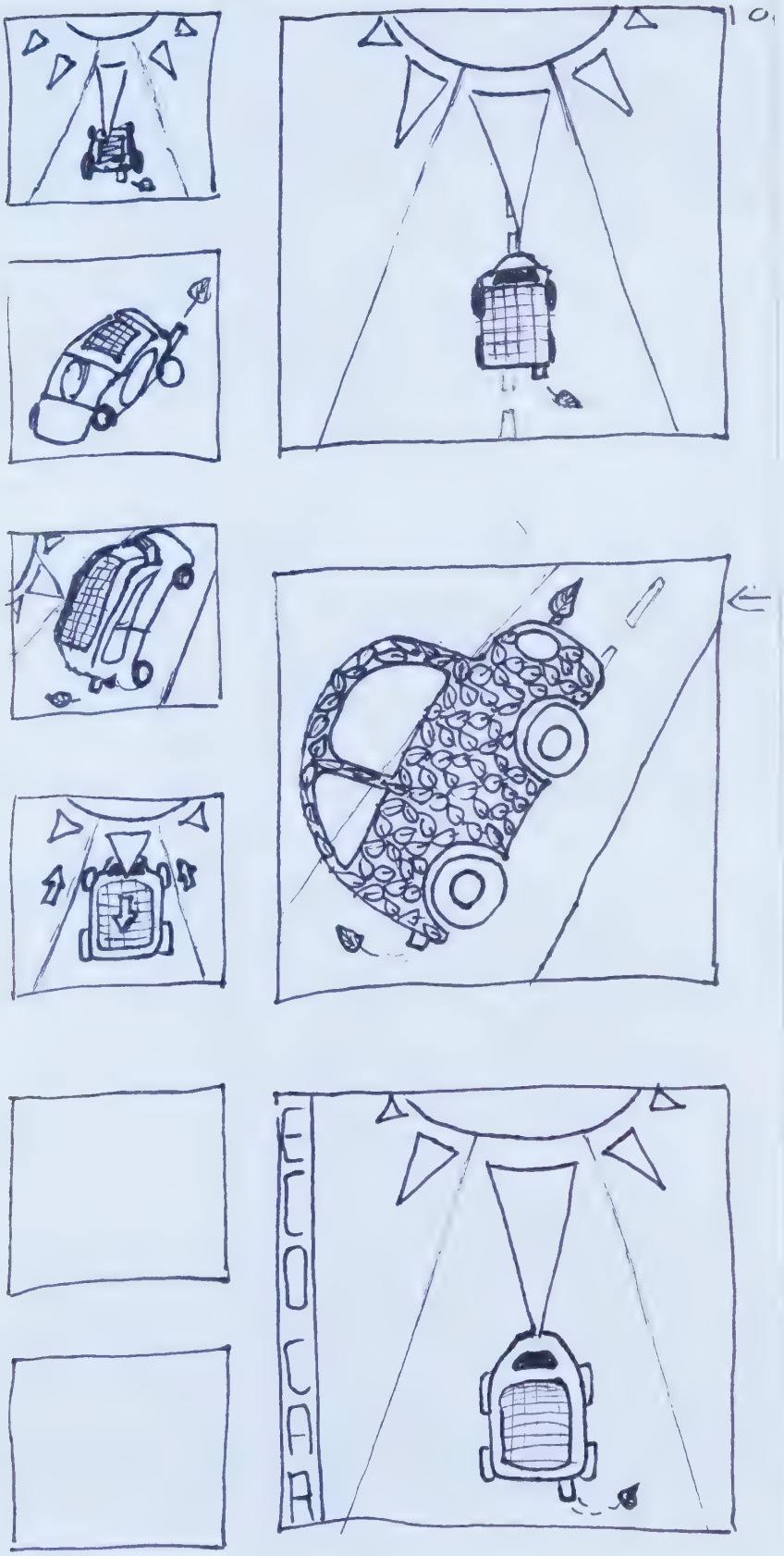
Appendix 4.3 [D]
Testing A: Student Questionnaire Results

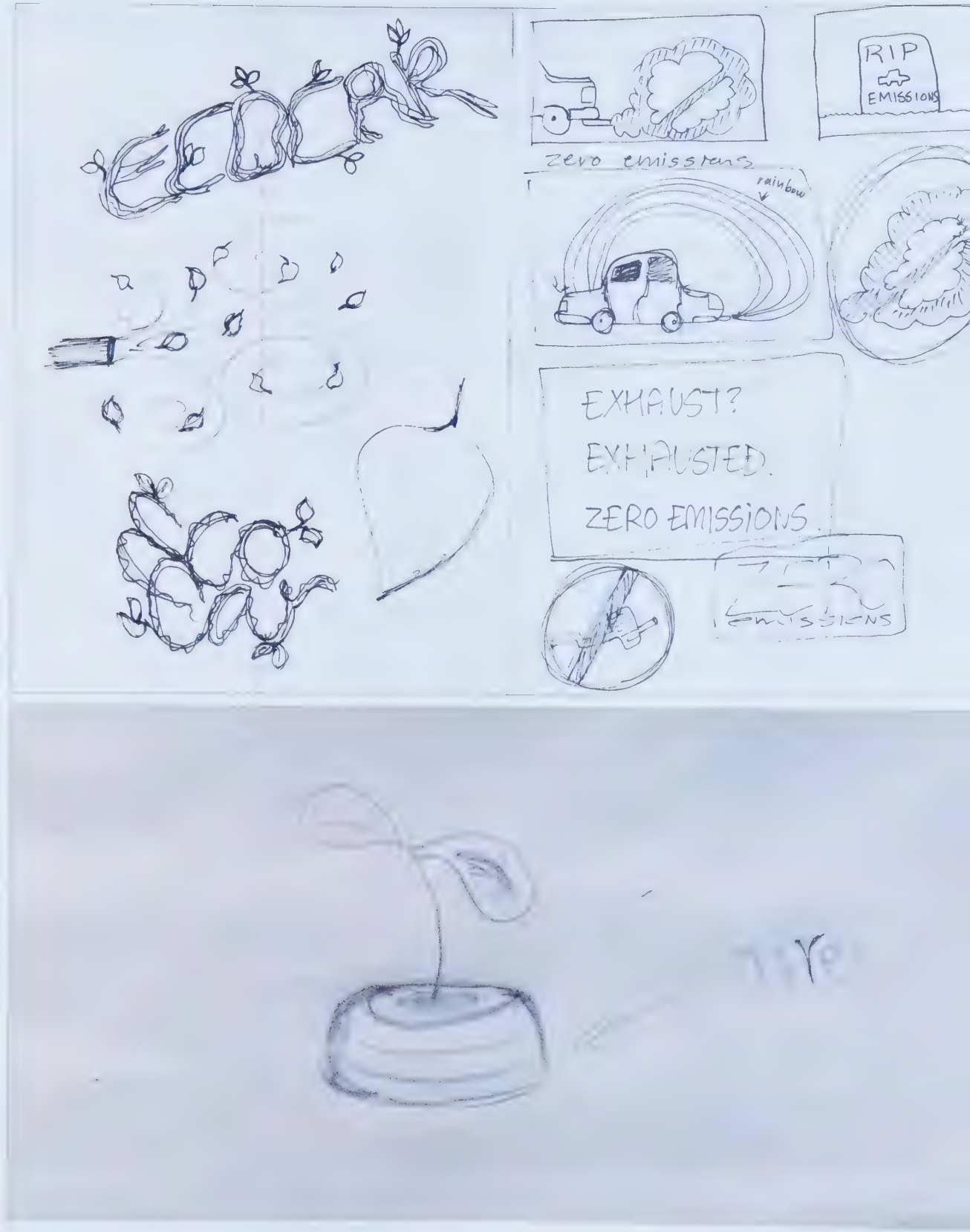
uestions	Student 1	Student 2	Student 3	Student 4	Student 5	Student 6	Average
. A real project brief makes me more dedicated to the project...	4	5	4	4	4	5	**4.3**
. Learning from/about other disciplines is beneficial to my education and self-growth...	5	5	5	5	4	5	**4.8**
. I feel that I have more freedom to be creative in a real project than with *Project 6*...	2	2	3	3	3	5	**3.0**
. *Design Fundamentals* (or any design class) can be more interesting if one of the projects had a *real project brief*...	4	4	5	4	4	5	**4.3**
. I feel like a real project has a higher likelihood of bringing unexpected results in comparison to *Project 6*...	5	1	3	4	3	5	**3.5**
. List any possible benefits to this type of learning.	"Would help to gain Experience dealing with clients."	"Promotes professionalism. Real-life scenarios experienced."	"This type of learning is beneficial because creating a logo for a real project brings out more creativity in me, because I feel like my ideas could be incorporated into a large scale projects that the public will see."	"More creative."		"Practice for the real world!"	
7. List any possible issues with this type of learning.	"None that I can think of."		"No issues that I can think of."	"Time managing."		"Too real? No issues. Distraction to school maybe."	
8. (Optional) Additional Comments.							

Appendix 4.3 [E]
Testing A: Visual Results






ECOCAR


RIP
EMISSIONS
zero emissions
rainbow
EXHAUST?
EXHAUSTED.
ZERO EMISSIONS.
EMISSIONS


ar


ar


car


car


car


ar


ar

Appendix 4.3 [F]
Testing A: Documentation

Collaboration Photos:


Where do we Fit?

Appendix 4.3 [G]
Testing B: Consent Forms (Collaborators)

CARING PROJECT: How Does it Work? SAGE Logo Design
Promoting Creativity in Design Education: Exploring An Interdisciplinary Approach
Consent Form for Collaborators to Participate in Workshop

Introduction

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There will be four sessions: the first one will introduce the project, the second and the third sessions will go over the process, and the final one will conclude it. All sessions will be approximately 90 minutes long and will be photographed, but you may opt out of these. All digital photographs will be stored in a secure place. Given the nature of a workshop being a group session, complete anonymity is not possible.

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Appendix 4.3 [G]
Testing B: Consent Forms (Students)

CARING PROJECT: How Does it Work? SAGE Logo Design
Promoting Creativity in Design Education: Exploring An Interdisciplinary Approach
Consent Form for Students to Participate in Workshop

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Appendix 4.3 [H]
Testing B: Project Brief

Collaborator's Brief:

Logo Design Competition

Keywords: technological, progressive, friendly, accessible, connections, engagement
Deadline: Group deadline on December 07, 2011. Finalist Deadline on January 09, 2012.

Background Information

Sage has just begun Edmonton SeniorNet, an exciting new project involving social media like Email, Facebook, Skype and Twitter. This project is funded by the Government of Canada's New Horizons for Seniors Program. It aims to engage seniors with an affordable and meaningful form of social interaction and to reduce feelings of isolation in older adults

Seniors can use social media in a variety of ways: keep in touch by sharing photos or personal messages with friends or family on Facebook; share recipes, stories or ideas on blogs and profiles; talk face to face with loved ones using Skype; use Twitter to connect with people or events in the community! The emphasis of the program is to help seniors make connections and stay engaged.

Sage is a vibrant and dynamic not-for-profit organization that encourages older persons in Edmonton and area to participate in a caring community where they enjoy optimal physical, mental, social and spiritual well-being. **Sage's** goals are to:

a) Provide services that promote socialization, intellectual stimulation and information acquisition for seniors;
b) Enhance the safety and well-being of those who are isolated, disadvantaged or at-risk in the community;
c) Connect seniors to services that assist them in participating as active members of the community; and
d) Advocate on issues affecting seniors on their behalf.

Sage provides a variety of unique and age-specific services available by telephone, e-mail or in-person.

Logo Usage

The logo will be used for all Edmonton SeniorNet materials at **Sage**, as well as at other senior-serving organizations that adopt the program. The logo will function as:

- A masthead for the Edmonton SeniorNet blog
  http://eamontonseniornet.tumblr.com
- Letterhead for all Edmonton SeniorNet communications, instructional handouts and publications
- Social media profile thumbnails, ie: Google, Facebook, Skype, Twitter
- Any future promotions of the Edmonton SeniorNet program

This project is funded by Government of Canada's New Horizons for Seniors Program Canada

Audience

The audience includes the senior demographic, non-profit sector, corporate sector, government sector and general public. As a result, the logo must be progressive and professional, so as to align with contemporary aesthetics and the cutting edge technology that the program embraces. A professional looking logo lends credibility to the correspondences and reports that Edmonton SeniorNet procures. In addition, it is critical that senior program participants perceive the logo as being accessible and representative of the benefits of participation.

The designer must also take into consideration the challenges experienced by some seniors with respect to their vision, ie. cataracts, age related macular degeneration. Major consideration must be given to:

- **Font** (Larger sizes should be used. Sans serif is preferred. Script fonts are difficult to read.)
- **Contrast** (High contrast is critical.)
- **Figure/ground relationship** ("less is more.")
- **Concept** (Seniors come from diverse backgrounds, and it can be difficult to balance whether a logo is too literal or too conceptual.)

Content

The logo should embody the goals of Edmonton SeniorNet: encouraging use of emerging technologies to increase social integration and engagement among seniors. The logo may deal with themes like computers, networks, personal connections and seniors.

Student should design a logo that can be easily turned into a masthead or letterhead, but that can also stand alone as an icon. The logo will become the signifier of Edmonton SeniorNet in all of the program branding. The designer may choose to present three variations of the same logo: icon, letterhead & masthead.

If words are to be used, the design should not rely too heavily on them. A seniors organization in Leduc, for example, might choose to use the logo, but call their program "Leduc SeniorNet." The type must be easily adaptable, to incorporate such name changes. A catch phrase such as "Make Connections" may be used. The designer is welcome to suggest an alternative tag line or catch phrase.

If a senior is portrayed, the designer should avoid senior stereotypes that depict older adults as frail. If multiple individuals are used, multiculturalism should be highlighted if possible.

Sage will request the original files of the logo. That way, slight adjustments can be made to the logo as needed.

This project is funded by Government of Canada's New Horizons for Seniors Program Canada

Extra Reading

Edmonton SeniorNet Blog
http://EdmontonSeniorNet.tumblr.com
* CTV interview
* Edmonton Senior Newspaper Article

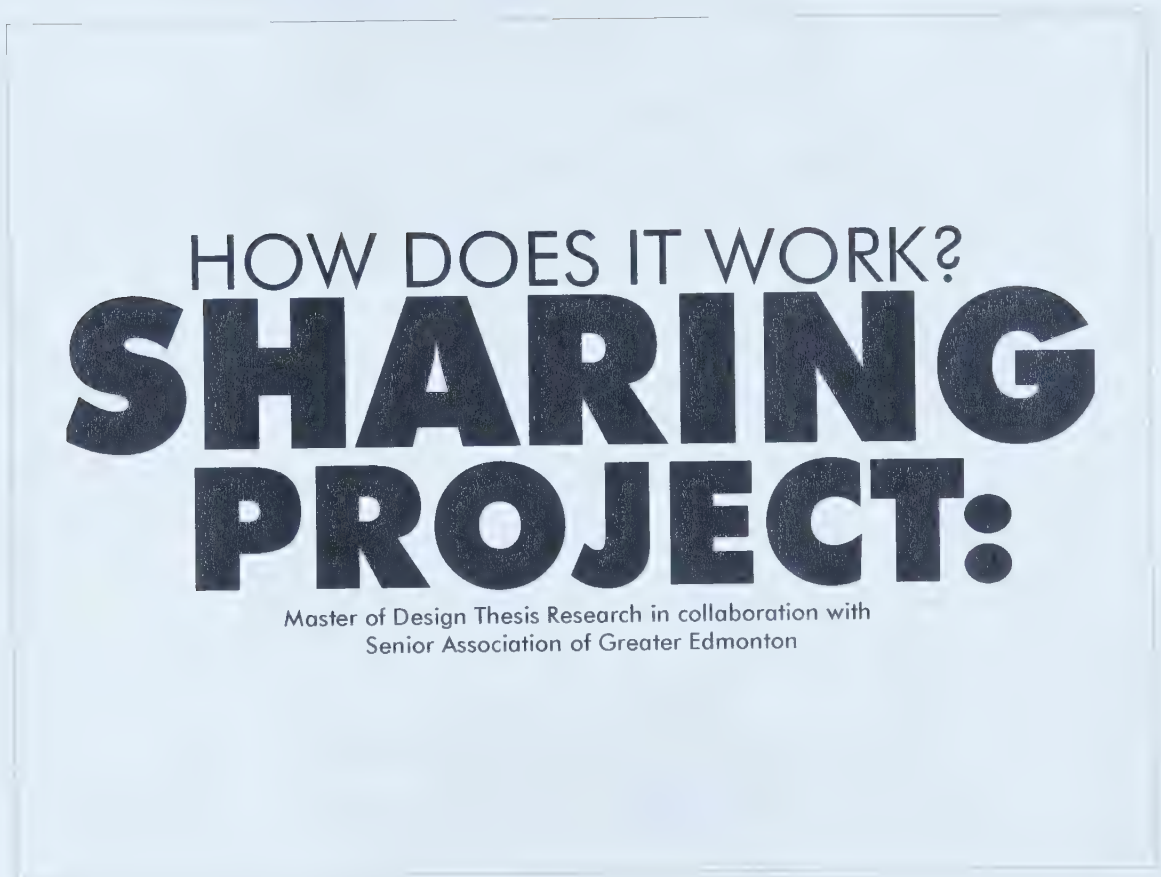
City of Edmonton and Edmonton Seniors Coordinating Council. (November 2010). *Edmonton Seniors: A Portrait.* http://seniorscouncil.net/uploads/files/Seniors%20Portrait.pdf
Focus on:
p. 1 – A Portrait of Seniors
p. 2 – Today's Seniors
p. 32 – Communication and information
p. 33 – Society's Attitudes towards Seniors
p. 34 – Respect and social inclusion

3 Logo Competition

This project is funded by Government of Canada's New Horizons for Seniors Program Canada

Appendix 4.3 [I]
Testing B: Presentation

Design Basics Presentation:



SENIOR CITIZENS

seniors


CARE
FOR SENIORS LLC.


GRACEFUL
SENIORS


senior activité
Association 1901


nysc
North York
SENIORS CENTRE

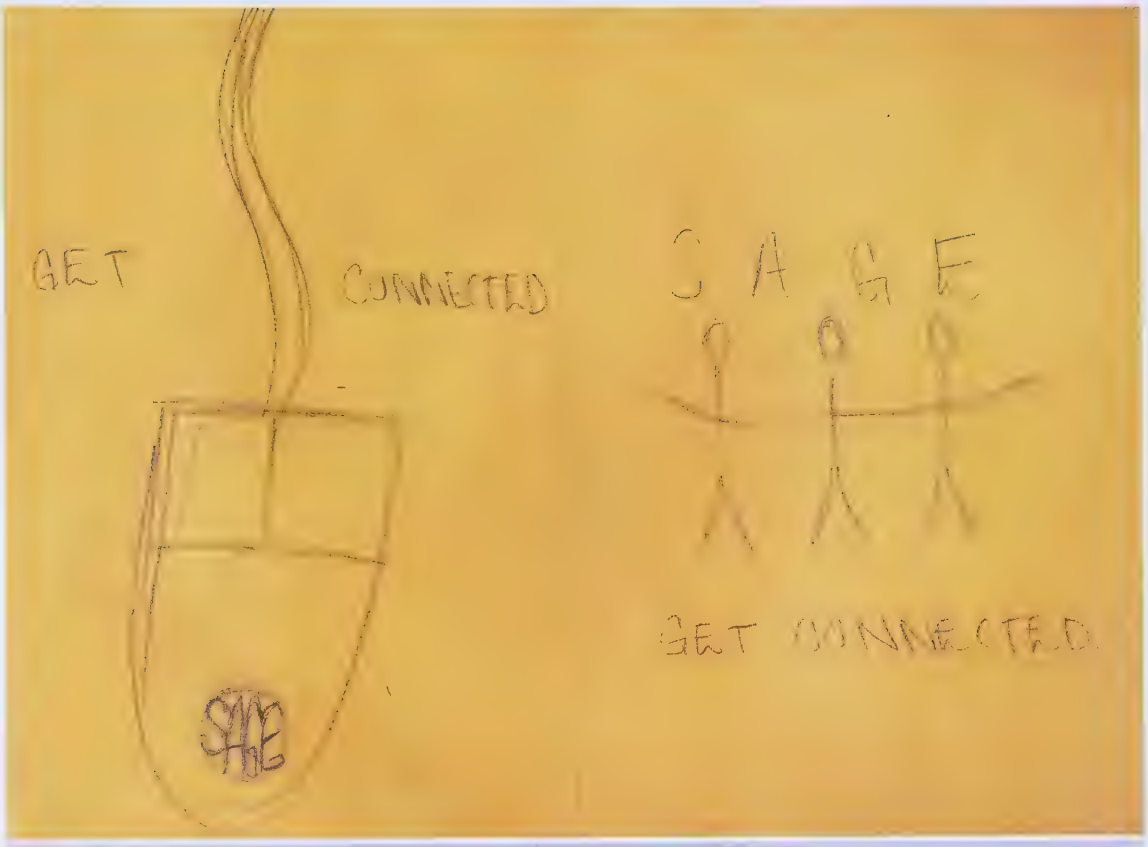
Appendix 4.3 [J]
Testing B: Student Questionnaire Results

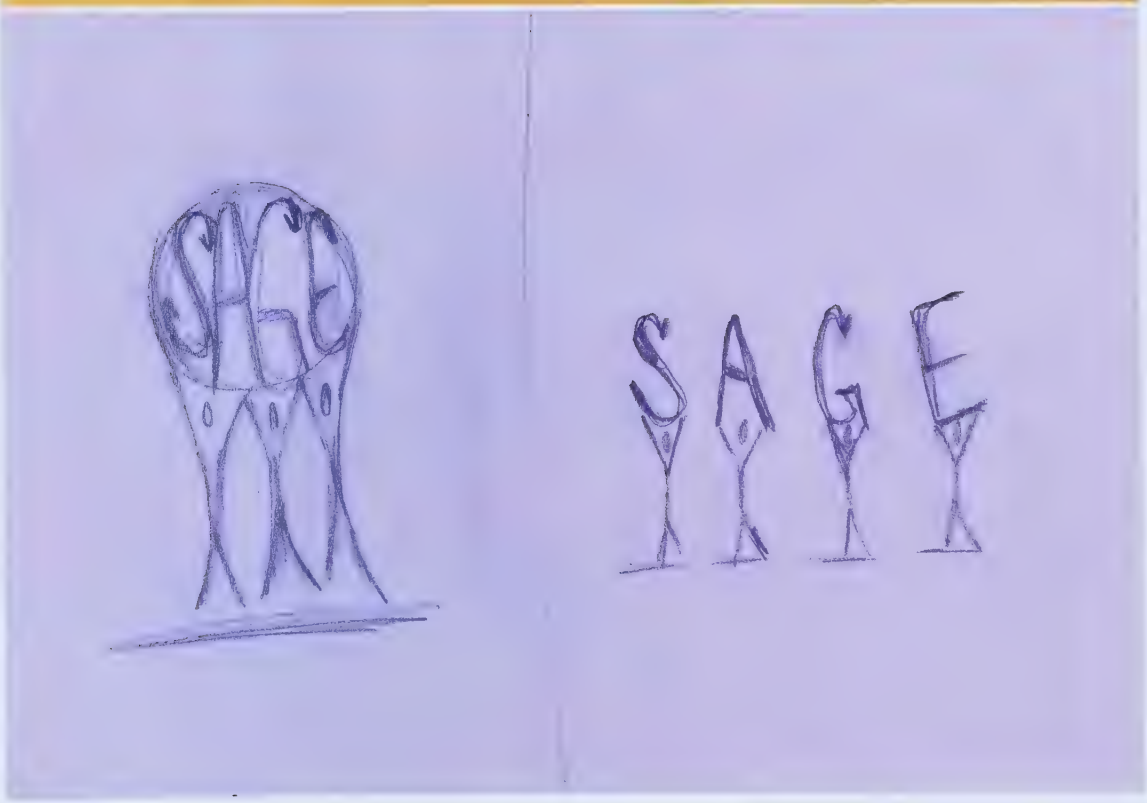
Questions	Student 1	Student 2	Student 3	Student 4	Student 5	Student 6	Student 7	Student 8	Student 9	Average
1. A real project brief makes me more dedicated to the project...	4	4	5	5	2	3	5	4	5	**4.1**
2. Learning from/ about other disciplines is beneficial to my education and self-growth...	5	4	5	5	4	4	5	3	5	**4.4**
3. I feel that I have more freedom to be creative in a real project than with *Project 6*...	2	3	2	1	2	2	3	2	4	**2.3**
4. *Design Fundamentals* (or any design class) can be more interesting if one of the projects had a *real project brief*...	4	3	4	5	3	4	4	3	4	**3.8**
5. I feel like a real project has a higher likelihood of bringing unexpected results in comparison to *Project 6*...	4	4	2	3	3	2	3	1	4	**2.9**

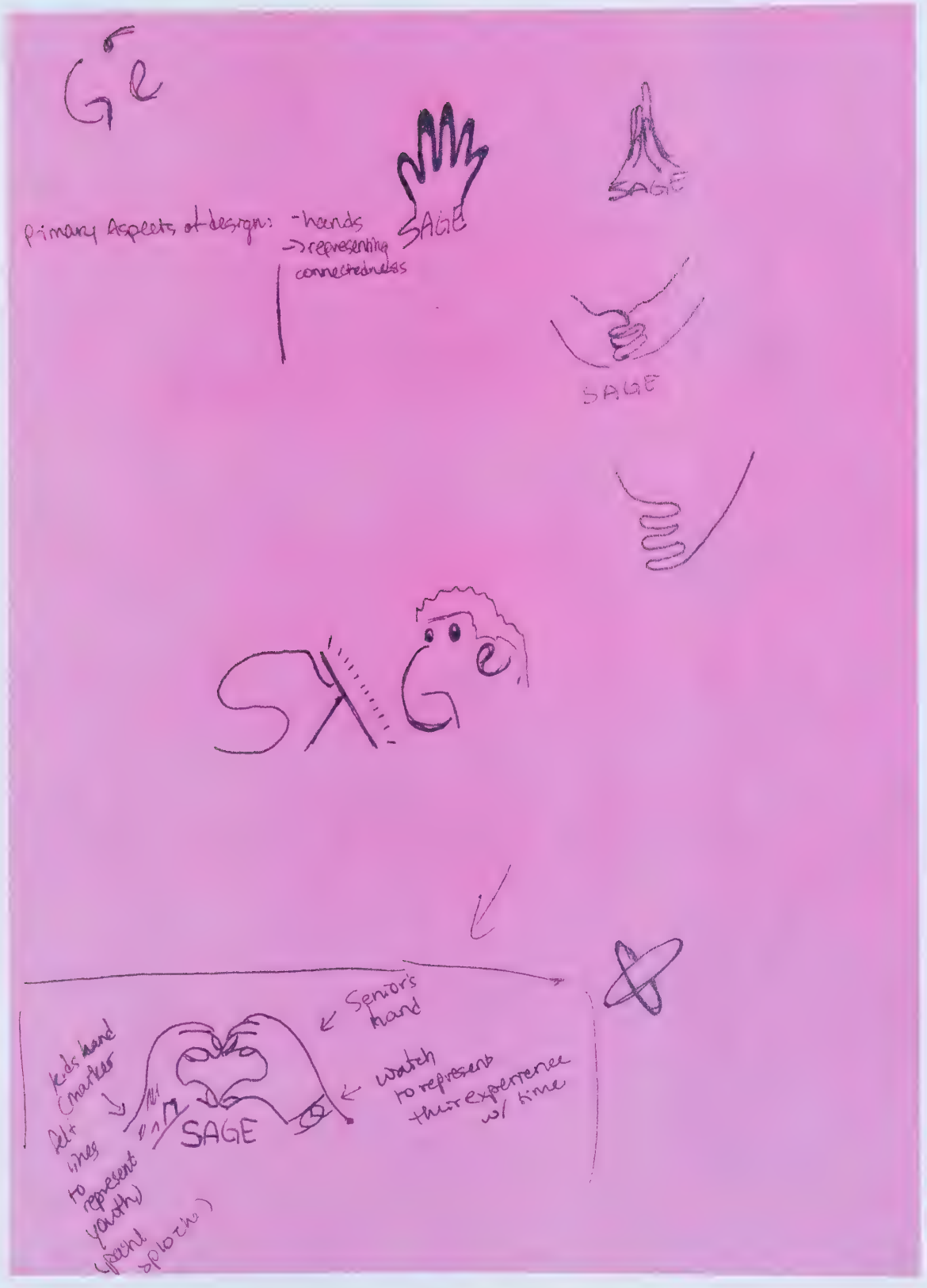
6. List any possible benefits to this type of learning.	"It would give students real experience in working with real problems."	"Analysis and criticism from a larger audience."	"Perhaps more practical."	"Getting to know real clients looking for real solutions to problems. Practicing in the classroom has benefits, but I feel actual clients may present students with new or previously not considered limitations or desires."			"Real-world experience, catering to an actual audience."	"Application to real world and more considerate through process."	"Real world learning."	
7. List any possible issues with this type of learning.	"It adds more pressure or stress to the learning process if there is a real project."	"You are restricted to available projects."	"More stressful."	"Clients may expect more than students can offer."			"Criterion limitations."	"Constrained time limit."	"Could be difficult for non-designer minds, they can make bad work."	
8. (Optional) Additional Comments.			"I hope you find a good design."							

Appendix 4.3 (K)
Testing B: Visual Results

Font = Gotham

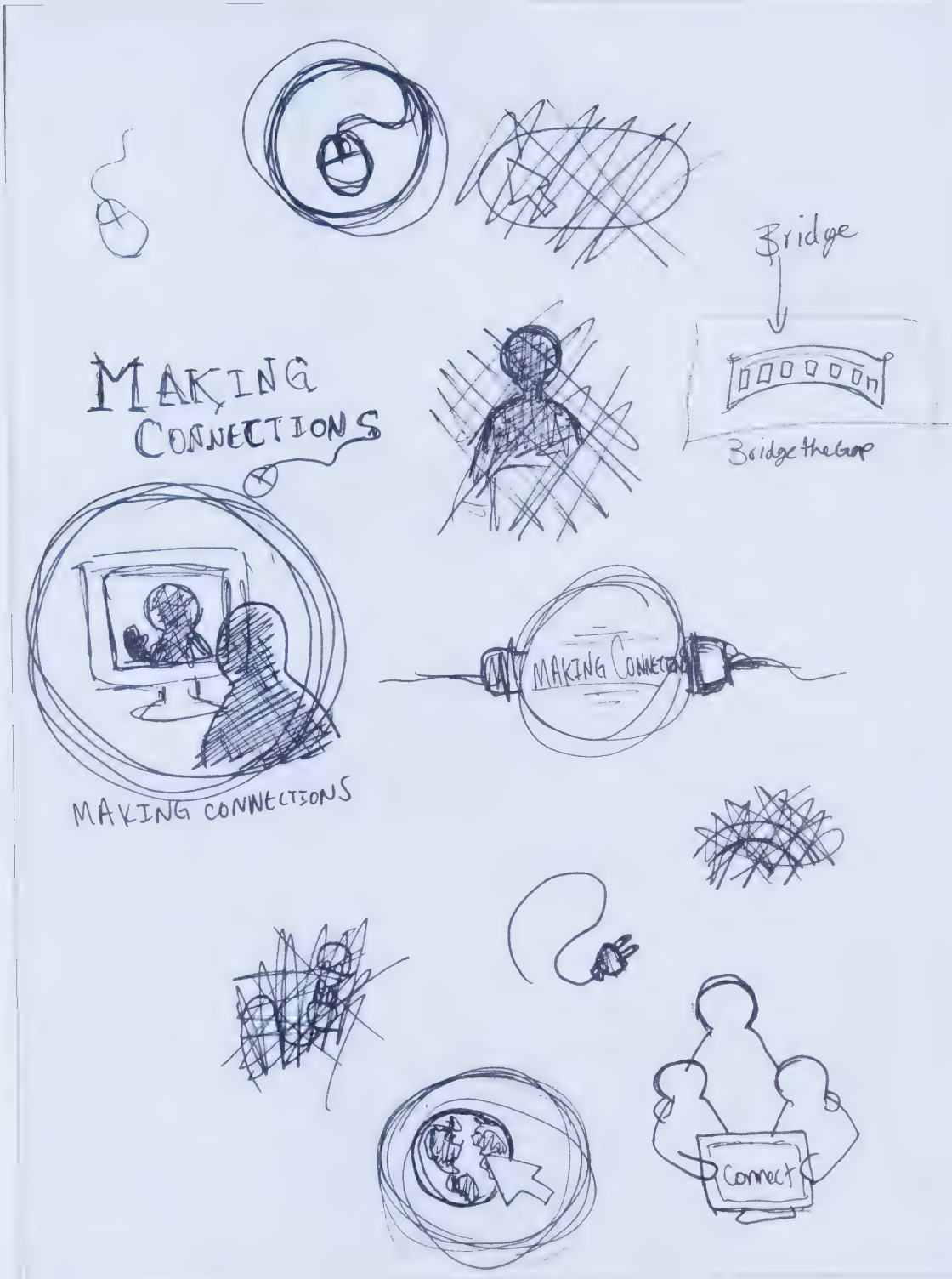

GET
CONNECTED
SAGE
GET CONNECTED


SAGE
SAGE


Primary Aspects of design: -hands
-> representing
connectedness
SAGE
SAGE
SAGE
SAGE
Senior's hand
watch to represent their experience w/ time
SAGE

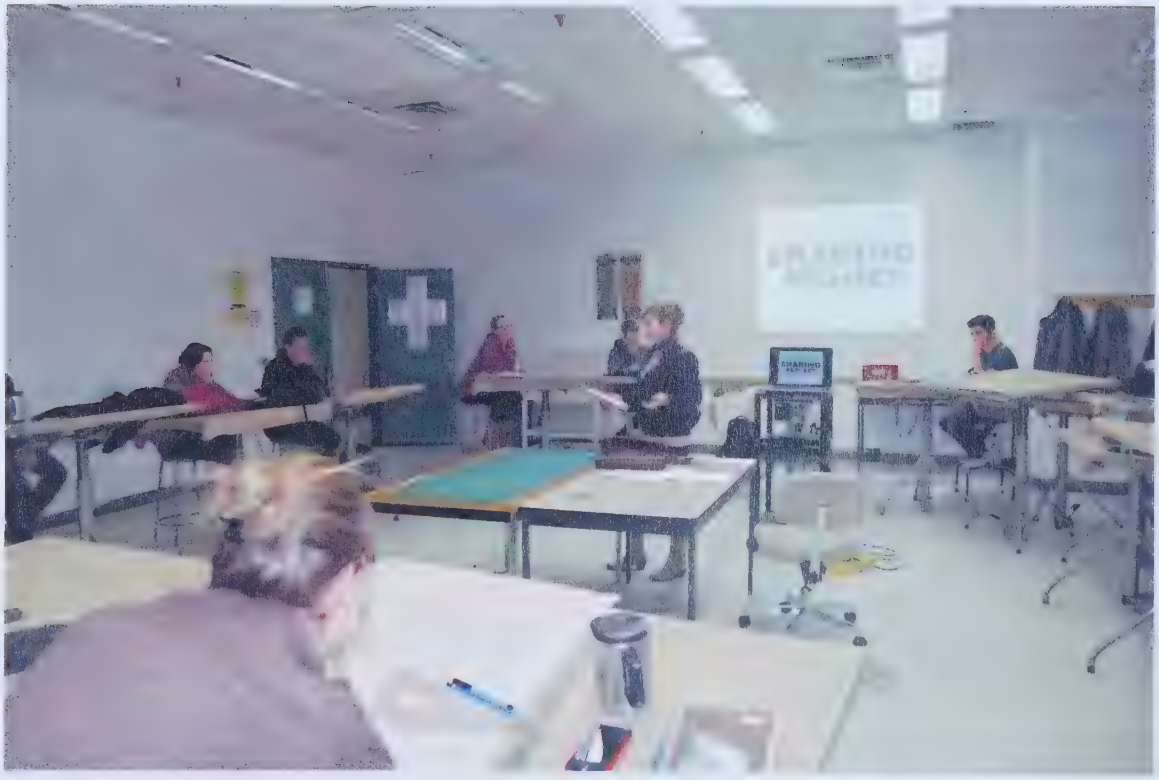

Sage
Senior
Comes! look
wise
Young
Woman
looks like
ol' steve
R.I.P
Heart
Embrace
S? from
her hair...
tender
make him
wise
Heart


E
SAGE
Sage
SAGE


Bridge
MAKING CONNECTIONS
Bridge the Gap
MAKING CONNECTIONS
Connect

Appendix 4.3 [L]
Testing B: Documentation

Collaboration Photos:



Appendix 4.3 [M]
Testing B: Feedback to Students

Comments on Logos from Collaborator (Raw)

Img010 – These are good ideas. The logo, however, was supposed to be for Edmonton SeniorNet, not Sage. As a logo for a seniors serving organization, I don't think the superhero is really relevant. It is important that the symbolism should deal in some way with seniors or with technology. The program aims to connect seniors with friends and family via modern technology such as Internet. As a result, the second logo doesn't really highlight the techy nature of the program. It also has no seniors context. I feel that the stick-figure motif also has been used in logos (and media) extensively, so the approach may be considered a bit clichéd or overdone.

Img011 – The mouse is a good signifier for the Internet and technology aspect of the program. However, it doesn't do much beyond that. Although the catchphrase gives of an impression of making connections, the image itself doesn't really do that. The program is called Edmonton SeniorNet, so the words SAGE should not be present. As a logo, also, the image and text should be tied to each other as one unit. The cord complicates the icon. The second logo is better, in that it actually shows people connecting. The problem is that Edmonton SeniorNet is about using computers to connect with others, so the technological aspect has to be included in the icon. I feel that the stick-figure motif also has been used in logos (and media) extensively, so the approach may be considered a bit clichéd or overdone. "Sage" is again present in this logo, whereas the program is called Edmonton SeniorNet.

Img012 – The logo is for a program called Edmonton SeniorNet, not for the organization Sage. This logo relies too much on the acronym, and the images chosen don't really communicate any characteristics of the program. The figures don't convey that the program uses emerging technologies to help seniors connect with friends and family.

Img013 – The logo is for a program called Edmonton SeniorNet, not for the organization Sage. This logo relies too much on the acronym, and the images chosen don't really communicate anything about the program. The figures don't convey that the program uses emerging technologies to help seniors connect with friends and family. The image of the hands forming a heart is not original – I feel that it has been featured in stock photos and media excessively in the past. I like that you have included the intergenerational aspect by having a senior's hand and a child's hand. Tiny details like paint splotches or watches don't come across in logos, which are often printed in small formats. The monkey is confusing, unprofessional and unnecessary.

Img014 & 15 & 17 – The program is called Edmonton SeniorNet, so the presence of "Sage " is confusing. The senior embracing a young person is a motif we could play with; however, the logo does not convey the technological aspect of the Edmonton SeniorNet program. The heart also might confuse people into thinking the senior and the young woman are in a relationship.

Img016 – These are not bad, although the logo should be for Edmonton SeniorNet and not Sage. These clearly borrow Internet iconography, which stresses the technological aspect of the program. However, they don't show that the technology will help form interpersonal connections. The "Make Connections" logo is cute but it is too cartoony and not very professional looking.

[redacted] – Program is called Edmonton SeniorNet, so the presence of Sage is confusing. I can't make out a clear logo from these sketches.

Img019 – These were the best images, as it this individual clearly read the design brief. I would be interested in seeing more sketches from this designer and think that a really good logo can be produced if more time is spent on it.

g020 – This logo is too literal and too complex. World & web (www.) are a little too heavy handed.

mg021 – This is a good beginning! Very simple and clean figure. Would have liked to see more, however.

– This logo was for a program called Edmonton SeniorNet, not for the organization Sage. Either way, the acronym S.A.G.E stands for Seniors Association of Greater Edmonton; taking it literally and portraying the spice bush is ineffective. The catchphrase also is too vague, and I fail to see a connection to seniors.

Comments on Logos from Collaborator and Organizer/Combined

Comments on Logo from SAGE

– These are good ideas. The logo, however, was supposed to be for Edmonton SeniorNet, not Sage. As a logo for a seniors serving organization, I don't think the superhero is really relevant. It is important that the symbolism should deal in some way with seniors or with technology. The program aims to connect seniors with friends and family via modern technology such as Internet. As a result, the second logo doesn't really highlight the techy nature of the program. It also has no seniors context. I feel that the stick-figure motif also has been used in logos (and media) extensively, so the approach may be considered a bit clichéd or overdone.

Comments from Organizer

Thank you for taking time to participate. Let me know if you would like any extra feedback from me or letter of participation for your future design studies. Feel free to contact me: lyubava.f@ualberta.ca

Comments on Logo from SAGE

g011 – The mouse is a good signifier for the Internet and technology aspect of the program. However, it doesn't do much beyond that. Although the catchphrase gives of an impression of making connections, the image itself doesn't really do that. The program is called Edmonton SeniorNet, so the words SAGE should not be present. As a logo, also, the image and text should be tied to each other as one unit. The cord complicates the icon. The second logo is better, in that it actually shows people connecting. The problem is that Edmonton SeniorNet is about using computers to connect with others, so the technological aspect has to be included in the icon. I feel that the stick-figure motif also has been used in logos (and media) extensively, so the approach may be considered a bit clichéd or overdone. "Sage" is again present in this logo, whereas the program is called Edmonton SeniorNet.

Comments from Organizer

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Tiny details like paint splotches or watches don't come across in logos, which are often printed in small formats. The monkey is confusing, unprofessional and unnecessary.

Comments from Organizer

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Comments on Logo from SAGE

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Comments from Organizer

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Comments from Organizer

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Comments on Logo from SAGE

mg016 – These are not bad, although the logo should be for Edmonton SeniorNet and not Sage. These clearly borrow Internet iconography, which stresses the technological aspect of the program. However, they don't show that the technology will help form interpersonal connections. The "Make Connections" logo is cute but it is too cartoony and not very professional looking.

Comments from Organizer

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Comments on Logo from SAGE

mg017 – The program is called Edmonton SeniorNet, so the presence of "Sage " is confusing. The senior embracing a young person is a motif we could play with; however, the logo does not convey the technological aspect of the Edmonton SeniorNet program. The heart also might confuse people into thinking the senior and the young woman are in a relationship.

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Comments on Logo from SAGE

[redacted] – Program is called Edmonton SeniorNet, so the presence of Sage is confusing. I can't make out a clear logo from these sketches.

Comments from Organizer

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Comments on Logo from SAGE

** Img019 – These were the best images, as it this individual clearly read the design brief. I would be interested in seeing more sketches from this designer and think that a really good logo can be produced if more time is spent on it.

Comments from Organizer

Congratulations! Your sketches were really impressive and SAGE would like to collaborate with you on developing logo for Seniors Net program.

Please contact SAGE:
Karolina Hanula
Emerging Social Media Project Assistant
Sage (Seniors Association of Greater Edmonton)
Phone: 780.423.5510 ext. 340
www.mysage.ca

Please also feel free to contact me if you need technical assistance and professional guidance with logo creation. I would also like to display your final logo in my graduate exhibition in September 2012:

Lyubava Fartushenko
MDes Candidate, University of Alberta
Principal Instructor/Teacher Assistant
Art and Design Department
lyubava.f@ualberta.ca

Comments on Logo from SAGE

g020 – This logo is too literal and too complex. World & web (www.) are a little too heavy handed.

Comments from Organizer

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Comments on Logo from SAGE

21 – This is a good beginning! Very simple and clean figure. Would have liked to see more, however.

Comments from Organizer

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Comments on Logo from SAGE

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Comments from Organizer

Thank you for taking time to participate. Let me know if you would like any extra feedback from me or letter of participation for your future design studies. Feel free to contact me: lyubava.f@ualberta.ca

Appendix 4.3 [N]
Testing C: Consent Forms (Collaborators)

DARE TO SHARE PROJECT: Campus Food Bank
Promoting Creativity in Design Education: Exploring An Interdisciplinary Approach
Consent Form for Collaborators to Participate in Workshop

Introduction

You are invited to participate in a workshop on *Promoting Creativity in Design Education: Exploring An Interdisciplinary Approach* research project conducted by Lyubava Fartushenko, MDes Candidate, Visual Communication Design, Department of Art and Design, University of Alberta.

The main aim of this research study is to investigate how interdisciplinary projects can positively affect students' creativity in the design classroom with the focus on Canadian post-secondary institutions. This research study defines, identifies, and establishes links between creativity and an interdisciplinary approach in undergraduate design education. The fundamental goal of this thesis research study is to promote creativity within post-secondary design education.

You, as a collaborator, should benefit from the process and final outcome by sharing your discipline-related knowledge with participants and generating new ideas that can be further utilized in your project.

Your Participation

Your role in this workshop is to actively collaborate with the participants and the researcher. You will be asked to conduct an introductory session, where you will introduce the project brief to a group of participants. With your permission, I will ask for a copy of a brief for further study. Your brief might be displayed in my final MDes exhibit and in any thesis-related papers and presentations.

There will be four sessions: the first one will introduce the project, the second and the third sessions will go over the process, and the final one will conclude it. All sessions will be approximately 30 minutes long and will be photographed, but you may opt out of these. All digital photographs will be stored in a secure place. Given the nature of a workshop being a group session, complete anonymity is not possible.

Given the nature of a workshop being a group session, complete anonymity is not possible. All workshop participants are kindly asked not to share the content of others' comments outside of the focus group meeting.

Your Confidentiality and Rights

The research with this project complies with the University of Alberta Standards for the Protection of Human Research Participants. Data recorded in the course of this research will be available only to my supervisor and me. This study has been approved by the University of Alberta Faculty of Arts, Science and Law Research Ethics Board.

I, *(please print your full name)* _____ acknowledge, understand, and agree to all of the following:

- I have been invited to participate in this research study.
- My participation in this study is voluntary.
- I have the right to withdraw from this study at any time with out penalty. If I choose not to participate the data collected will not be utilized.
- I have the right to my privacy, anonymity, and confidentiality. My name and personal information will not appear on any materials.
- All of the personal information collected here will remain confidential.
- I may be quoted directly in an MDes thesis, and possibly in related papers and presentations, but my anonymity will be maintained.
- Any data collected in this study will be stored in a safe and secure place.
  (Please check-mark)

  ☐ You have my permission to use my project brief I wrote for this study.
  ☐ You have my permission to take photos of me.
  ☐ You have my permission to connect my name with an image of me in written or visual presentations related to this study.

Signature of participant _____ Date _____

If you have any questions with regards to this research project, please contact:

Principal Investigator
Lyubava Fartushenko
Art and Design, Faculty of Arts, 3-71 Fine Arts Building,
University of Alberta, Edmonton, AB, T6G 2C9, Canada
Campus phone number: (780) 492 7877
Email: lyubava.f@ualberta.ca

Investigator's Supervisor
Aidan Rowe
Art and Design, Faculty of Arts, 3-77 Fine Arts Building,
University of Alberta, Edmonton, AB, T6G 2C9, Canada
Campus phone number: (780) 492 8591
Email: aidan.rowe@ualberta.ca

Appendix 4.3 [N]
Testing C: Consent Forms (Students)

DARE TO SHARE PROJECT: Campus Food Bank
Promoting Creativity in Design Education: Exploring An Interdisciplinary Approach
Consent Form for Students to Participate in Workshop

Introduction

You are invited to participate in a workshop on *Promoting Creativity in Design Education: Exploring An Interdisciplinary Approach* research project conducted by Lyubava Fartushenko, MDes Candidate, Visual Communication Design, Department of Art and Design, University of Alberta.

The main aim of this research study is to investigate how interdisciplinary projects can positively affect students' creativity in the design classroom with the focus on Canadian post-secondary institutions. This research study defines, identifies, and establishes links between creativity and an interdisciplinary approach in undergraduate design education. The fundamental goal of this thesis research study is to promote creativity within post-secondary design education.

You, as a participant, should benefit from the process and final outcome by learning about a real-life design process, familiarizing yourself with other disciplines, and by expanding your portfolio and design skills.

Your Participation

Your role in this workshop is to actively participate in a given exercise and share your observations on overall process. You will be asked to complete an assigned exercise. With your permission, I will collect the completed exercise for further study, document it, and return it to you. You may add your name to the exercise for a proper credit or remain anonymous. Your exercise might be used in my final MDes public display, and in any thesis-related papers and presentations.

There will be two sessions: the first one will introduce the project and the second one will conclude it. Both sessions will be approximately 30 minutes long and will be photographed, but you may opt out of these. All digital photographs will be stored in a secure place. If the information collected is quoted or utilized in an MDes thesis report your anonymity will be maintained.

You will also be asked to answer a questionnaire in the second session, which will summarize your feedback and reflect you experiences.

Given the nature of a workshop being a group session, complete anonymity is not possible. All workshop participants are kindly asked not to share the content of others' comments outside of the focus group meeting.

Your Confidentiality and Rights

The research with this project complies with the University of Alberta Standards for the Protection of Human Research Participants. Data recorded in the course of this research will be available only to my supervisor and me. This study has been approved by the University of Alberta Faculty of Arts, Science and Law Research Ethics Board

I, *(please print your full name)* _____ acknowledge, understand, and agree to all of the following:

- I have been invited to participate in this research study.
- My participation in this study is voluntary.
- I have the right to withdraw from this study at any time with out penalty. If I choose not to participate the data collected will not be utilized.
- I have the right to my privacy, anonymity, and confidentiality. My name and personal information will not appear on any materials.
- All of the personal information collected here will remain confidential.
- I may be quoted directly in an MDes thesis, and possibly in related papers and presentations, but my anonymity will be maintained.
- Any data collected in this study will be stored in a safe and secure place.
  (Please check-mark)

  ☐ You have my permission to use my project brief I wrote for this study.
  ☐ You have my permission to take photos of me.
  ☐ You have my permission to connect my name with an image of me in written or visual presentations related to this study.

Signature of participant _____ Date _____

If you have any questions with regards to this research project, please contact:

Principal Investigator
Lyubava Fartushenko
Art and Design, Faculty of Arts, 3-71 Fine Arts Building,
University of Alberta, Edmonton, AB, T6G 2C9, Canada
Campus phone number: (780) 492 7877
Email: lyubava.f@ualberta.ca

Investigator's Supervisor
Aidan Rowe
Art and Design, Faculty of Arts, 3-77 Fine Arts Building,
University of Alberta, Edmonton, AB, T6G 2C9, Canada
Campus phone number: (780) 492 8591
Email: aidan.rowe@ualberta.ca

Appendix 4.3 [O]
Testing C: Project Brief

DARE TO SHARE PROJECT: Campus Food Bank
Contact: Ashley Seibert, ashley.seibert@su.ualberta.ca
Nehal Mahmoud, nehal.mahmoud@su.ualberta.ca
Lyubava Fartushenko, lyubava.f@ualberta.ca

1. We are looking to spread awareness on campus of Campus Food Bank's services and what our mandate is a food bank.

2. *"Founded in 1991, the Campus Food Bank is a registered charity (#89241 4566 RR0001) that distributes food items and toiletries to all members of the university community: students, staff, alumni and their children. As such, we are governed by a Board of Directors that represents the diversity of the University Community. Were it not for the generosity of the University Community, faculties, departments, student groups, and countless individuals, we would not exist. Because of this community's remarkable generosity, we were able to distribute enough food to feed over 2500 individuals last year and make over 1200 food hampers. Please support the University of Alberta Campus Food Bank with your donation of food, toiletries, money or time. Proper nutrition shouldn't be a luxury item. If you are in need, please do not hesitate to use our confidential services."*

3. We would like to explain who we're here to serve — Campus Food Bank exists to ensure that our campus communities have access to healthy food as a right, not a privilege. We'd like to clarify that we exist to serve those in need as short-term food relief and that our services are available for those who would otherwise go hungry due to circumstances out of their control.

4. We would like to translate the message (we can work on the wording) into about 10 languages.

5. The languages we would like to use are the 10 most common languages here at the University of Alberta, some common ones might be (in no particular order):
   - English (we'd still like local students to be able to read them)
   - French
   - German
   - Spanish
   - Farsi (persian)
   - Mandarin
   - Cantonese
   - Arabic
   - Korean
   - Urdu

   *the language list is not finalized yet

6. Our target audience will be international and local students — seeing the posters in all the languages will engage everyone.

7. We are planning to use the posters around the U of A campus – we post extensively in different buildings to reach the whole campus community. We may also end up using these materials on our website, facebook page, etc. in order to spread the word electronically.

8. We would like to have this project completed by the beginning to middle of March at the latest. *DEADLINE: Wednesday, March 7, 2012.*

9. Red is our service's colour but we're open to many different colours and styles. We just need them to be eye-catching and clear. An idea that has been floated in the past was speech bubbles with someone asking a mock question about Campus Food Bank and there being an answer/clarification about our service below. The SU's Peer Support Centre used speech bubbles in their ad campaign over the last year or so though, so it may be too similar.

Appendix 4.3 [P]
Testing C: Project Timeline

DARE TO SHARE PROJECT: Campus Food Bank

DARE TO SHARE PROJECT: Campus Food Bank
Project Timeline

Timeline: February–March 2012
Deadline: Wed / Mar 7 / 2012
Print Deadline: Mon . Mar 12 / 2012

1. Wed / Feb 1 / 2012
   Introductory Workshop:
   Background information and introduction to Campus Food Bank
   Design objectives and presentation
   Project Brief overview
   Timeline
   Project direction: roles and tasks

2. Wed / Feb 15 / 2012
   Work In-progress Workshop:
   Bring initial ideas
   Class critique and discussion of the progress/design feedback
   Further direction

3. Wed /Feb 29 / 2012
   Work In progress Workshop:
   Develop ideas further
   Class critique and discussion of the progress/design feedback
   Final design directions

4. Wed / Mar 7 / 2012
   Final Workshop:
   Final critique and feedback
   Collect final work for digitalizing (if applicable)

Appendix 4.3 [Q]
Testing C: Presentation

Design Basics Presentation:

POSTER: Definition

"**Poster** is a relatively large printed card or sheet of paper, often illustrated, posted to advertise or publicize something."

- Websters Dictionary

Norman Rockwell "We Can Do It!" 1942

POSTER: Basics

- poster involves two modes of communication: **language** and **image**
- the goal is to grab attention and retain it until message is delivered

Adolphe Mouron Cassandre. "L'Atlantique" 1920s

DARE TO SHARE PROJECT

POSTER: Basics

- main factors that contribute to success:

1. Originality
2. Clarity
3. Directness
4. Effective use of design principles

"For this lecture poster for the AIGA Detroit we tried to visualize the pain that seems to accompany most of our design projects."

Stefan Sagmeister

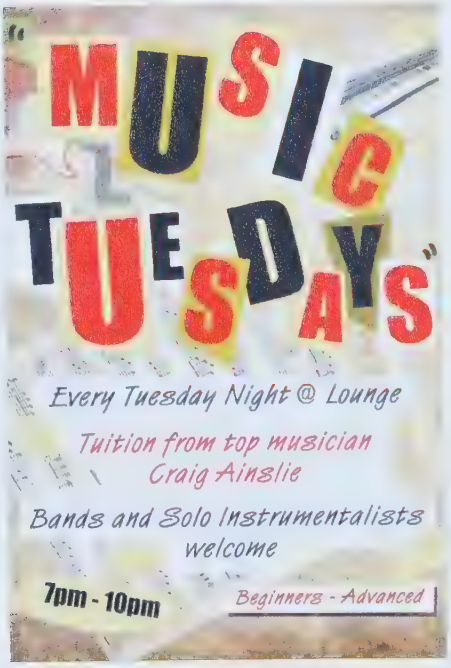
DARE TO SHARE PROJECT

POSTER: Basics

1. Originality

(example: music poster)

- does it grab people's attention instantly?
- does it attract negative or positive attention?



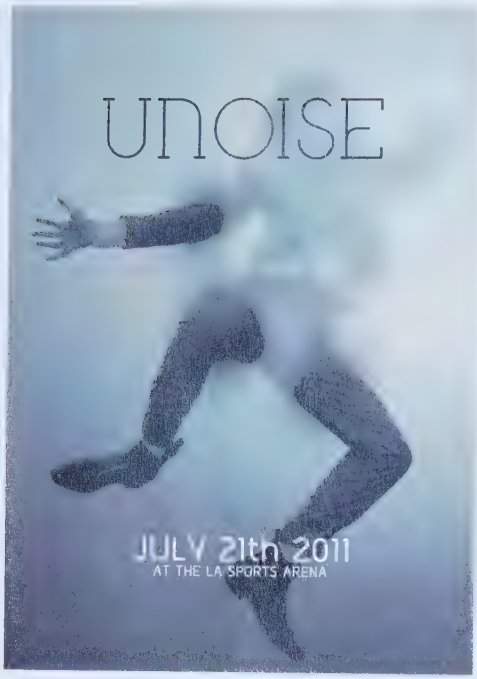
Music Lessons Poster

POSTER: Basics

1. Originality

(example: music poster)

- does it grab people's attention instantly?
- does it attract negative or positive attention?
- does it shock?
- does it inform?



Unoise Music Poster, 2011

POSTER: Basics

2. Clarity

(example: exhibit poster)

- does it communicate the message?

Kazumasa Nagai Exhibit

DARE TO SHARE PROJECT

POSTER: Basics

2. Clarity

(example: exhibit poster)

- does it communicate the message?
- does it reach a target audience?
- does it appeal to non-target audience?

Japanese Posters Today

DARE TO SHARE PROJECT

POSTER: Basics

3. Directness

(example: advertising campaign)

- is the message direct?

SellSell "The Is A Bullshit Free Zone" fold-out newsprint posters

POSTER: Basics

3. Directness

(example: advertising campaign)

- is the mesage direct?
- what language is used?

is it accessible?

James Victore "Use Condom" 1997

POSTER: Basics

4. Effective use of design principles

- Unity (repetition, continuation, closure)
- Emphasis, Focal Point (isolation, placement)
- Balance (symmetrical, asymmetrical, radial)
- Proportion, Scale
- Contrast
- Movement
- Rhythm/Pattern
- Harmony

Poor Designers "Mapping Europe"

DARE TO SHARE PROJECT

POSTER: Grid

Poor Designers "Mapping Europe"

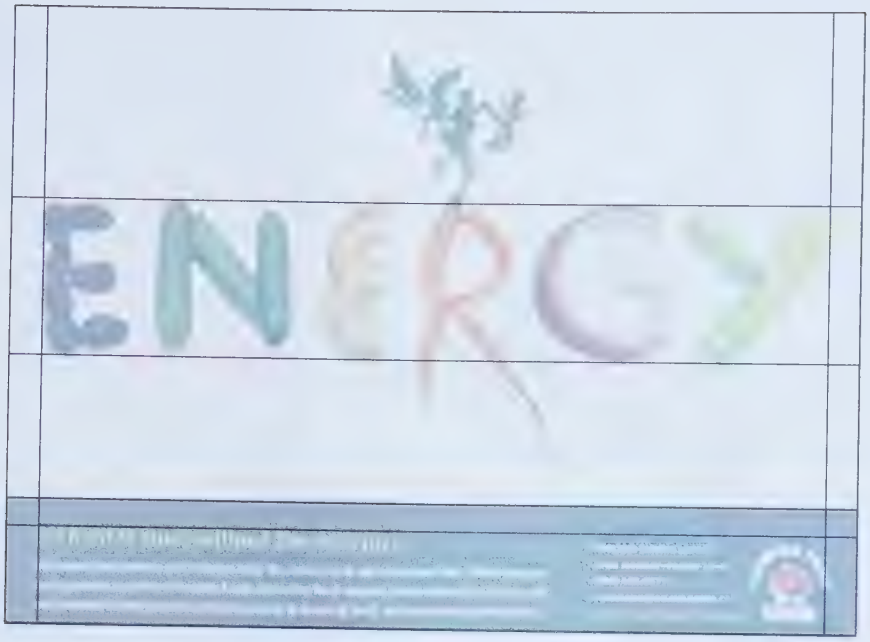
DARE TO SHARE PROJECT

POSTER: Grid

Campus Food Bank Poster

DARE TO SHARE PROJECT

POSTER: Grid

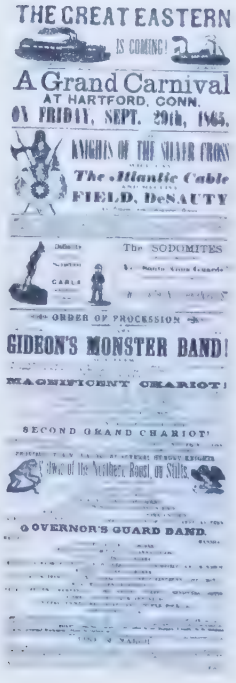


Campus Food Bank Poster

DARE TO SHARE PROJECT

POSTER: History

- printed public advertisements can be traced back to the 15th c
- before poster, there was **broadside** — a large sheet of paper printed on one side only



Broadside "The Great Eastern is Coming!" 1865.

DARE TO SHARE PROJECT

POSTER: History

- the poster did not emerge until around 1860 with the invention of lithography

Unknown Poster advertising bicycles and tricycles About 1880 Paris

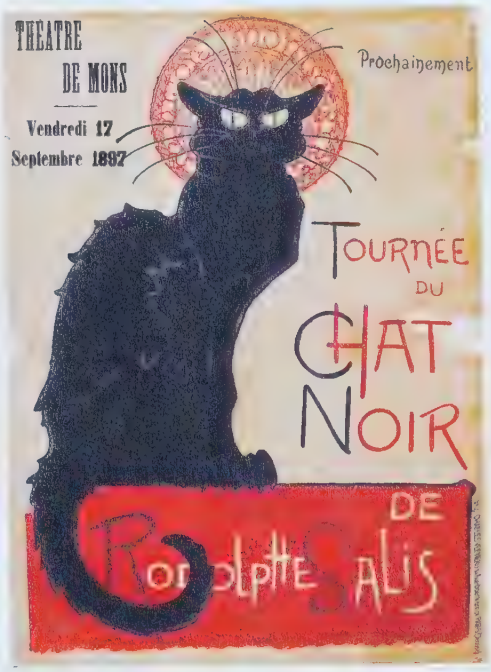
DARE TO SHARE PROJECT

POSTER: History

1880–1914

Belle Époque (Beautiful Era)

- the Industrial Revolution created a new middle class, one with an expendable income



Theophile Alexandre Steinlen, 1896.

POSTER: History

- posters to celebrate the culture of of Montmartre

Henri de Toulouse-Lautrec - Moulin Rouge – La Goulue - 1891

POSTER: History

1890–1910

Art Nouveau (New Art)

- inspired by natural forms and structures:

flowers, plants, curved lines

- harmony with the natural environment

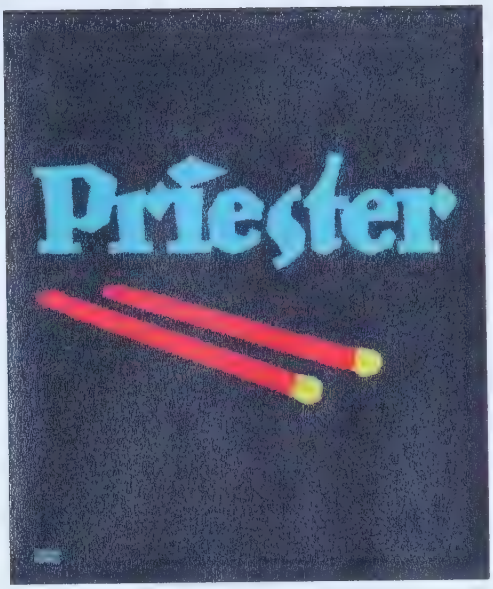
Alphonse Mucha - Zodiac

POSTER: History

Sachplakat (Proper Poster)

Lucian Bernhard

- radical change in poster design



Lucian Bernhard "Priester", 1905

DARE TO SHARE PROJECT

POSTER: History

Sachplakat (Proper Poster)

IPod Advertisement

POSTER: History

Propaganda Posters

- during war time the poster became a vital way for governments to manipulate people

James Montgomery Flagg "Uncle Sam Poster" 1917

POSTER: History

Propaganda Posters

- propaganda for the Stalinist regime

El Lissitzky "Beat the Whites with the Red Wedge!" 1919

POSTER: History

Social Realism

- movement that shows working class activities as heroic

Denisov and Vatolina "Keep Your Mouth Shut" 1941

POSTER: History

Bauhaus Era

- Bauhaus, was a school in Germany
- it was founded with the idea of creating a 'total' work of art in which all arts and architecture would be brought together

Joost Schmidt "Bauhaus Exhibit Poster" 1923

DARE TO SHARE PROJECT

POSTER: History

Post-war Design / Surrealism

- photo-montage

Herbert Matter

DARE TO SHARE PROJECT

POSTER: History

1920–1965

Swiss Style

Hans Neuburg 1961

DARE TO SHARE PROJECT

POSTER: History

1920–1965

Swiss Style

Hans Neuburg 1965

DARE TO SHARE PROJECT

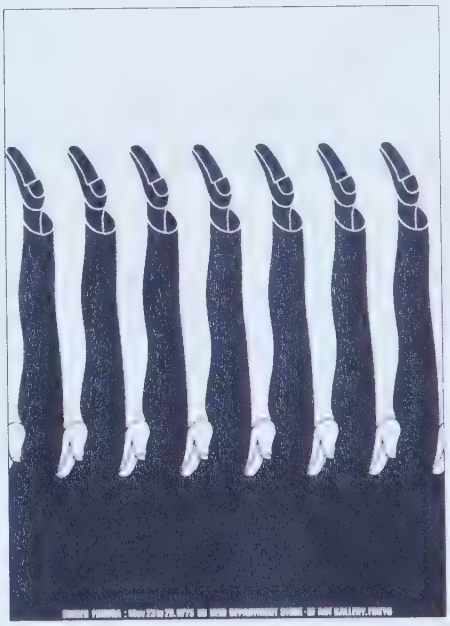
POSTER: History

Swiss Style / Japanese Poster Design

Shigeo Fukuda

- "I believe that in design, 30 percent dignity, 20 percent beauty and 50 percent absurdity are necessary."

Shigeo Fukuda



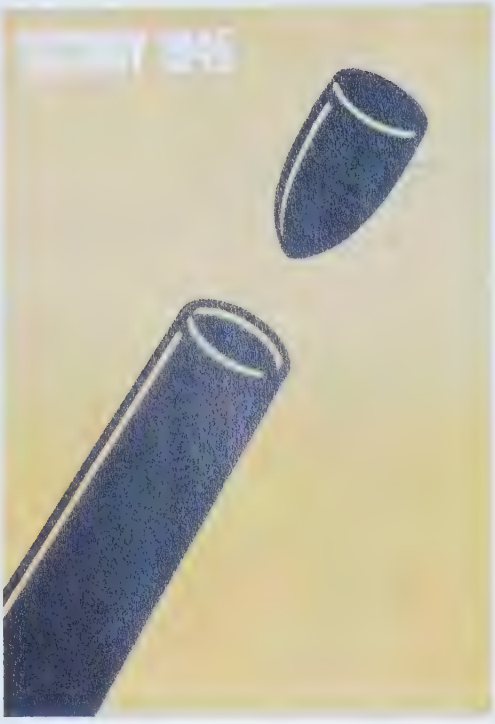
Shigeo Fukuda

DARE TO SHARE PROJECT

POSTER: History

Swiss Style / Japanese Poster Design

- iconic antiwar poster

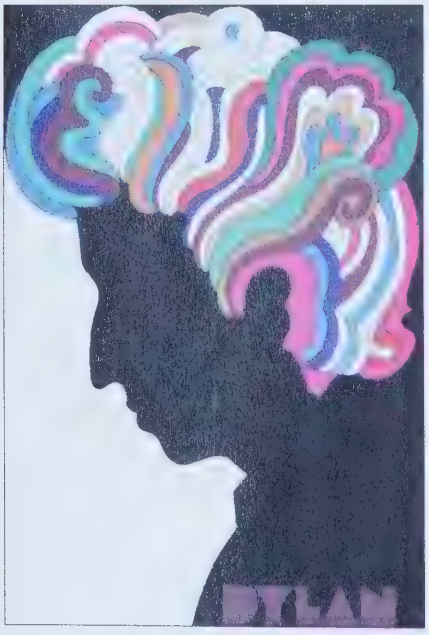


Shigeo Fukuda

DARE TO SHARE PROJECT

POSTER: History

Swiss Design Influence



Milton Glaser "Bob Dylan Poster" 1966

POSTER: Today

- Frank Shepard Fairey created this poster in a day
- inspired by Social Realism

Frank Shepard Fairey

300m community food swap organization, Apples for Eggs.

POSTER: Today

DARE TO SHARE PROJECT

SOURCES

- Hollis, Richard. Swiss Graphic Design. Yale University Press: 2006.
- Gallo, Max. The Poster in History. W.W. Norton and Company: 2000.
- Purvis, Alston and Martijn Le Coultre. A Century of Posters. Lund Humphris: 2002.

IMAGES:

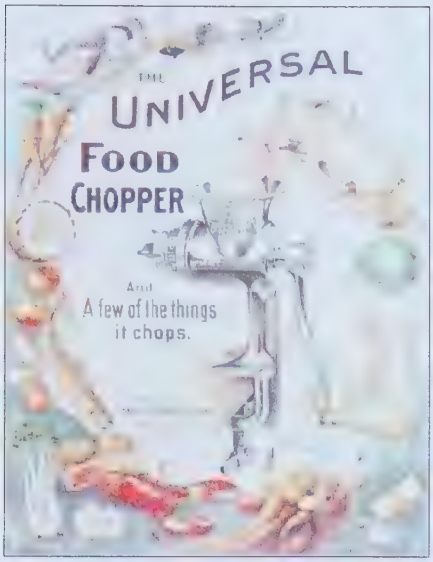
- Poor Designers. "Mapping Europe."
- Image of Broadside. <http://atlantic-cable.com/Ephemera/Broadsides/index.htm>
- Image of Jules Cheret poster. <http://imageshack.us/f/22/5710fe84b542.jpg/>
- Kazumasa Nagai posters. <http://theanimalarium.blogspot.com/2011/01/life-is-change.html>
- Music poster. <http://kplus1-design.blogspot.com/2010/03/music-lessons-poster.html>
- SellSell UK Agency. <http://www.sellsell.co.uk/our_work/all>
- Fast Food Nation <http://www.impawards.com/2006/fast_food_nation.html>
- 300m community food swap organisation, Apples for Eggs <http://www.300million.com/blog/post/?ID=56>
- Starbacks Poster <http://cmaygross.files.wordpress.com/2011/11/starbucks_coffee_poster_design_by_darkman4e.jpg>

Appendix 4.3 [R]
Testing C: Student Questionnaire Results

stions	Student 1	Student 2	Student 3	Student 4	Student 5	Student 6	Student 7
real project brief nakes me more edicated to roject...	3	4	4	4	5	5	4
earning from/ bout other isciplines is eneficial to my ducation and self-rowth...	4	4	4	5	5	5	5
feel that I have nore freedom to e creative in a eal project than vith *Project 6*...	4	5	4	4	5	5	4
Design *Fundamentals* or any design class) can be more nteresting if one of he projects had a *eal project brief*...	2	4	4	4	5	5	5
feel like a real project has a nigher likelihood of bringing unexpected results n comparison to *Project 6*...	4	5	4	4	5	3	5
List any possible benefits to this type of learning.	"Its for charity."	"Deadlines are real. Creativity is appreciated."	"Experience in dealing with a potential client. Process of a real project (interaction and roles)."	"More real-life hands-on experience rather than just theory."	"I have learnt about different style of poster."	"More interesting. More experiences."	
List any possible issues with this type of learning.	"The extra time it took away was stressful."	"Time during school is hard to come by."			"Language."	"Everyone must obey the same idea."	"Due to the fact that this was conducted in a 100 level class, there is a great likelihood of low quality produced by students whoa are taking the course as an option, but are not interested in Art and Design. This could pose a problem for clients."
(Optional) Additional Comments.		"Fun times :)"					

Student 8	Student 9	Student 10	Student 11	Student 12	Student 13	Student 14	Average
5	3	3	2	3	3	4	**3.7**
4	4	5	5	4	2	5	**4.4**
5	4	5	5	3	2	3	**4.1**
4	3	5	2	3	3	4	**3.8**
4	5	3	3	4	2	3	**3.9**
"Allows for more creativity. Has real world applications."	"Group brainstorming. Creative.		"Opportunity to see the 'real' design process. Learning above and beyond is always welcome."				
	"Stressful. Time consuming."		"If it isn't graded, I feel less motivation to come up with a finished artwork, when trying to balance other courses with this."				

Appendix 4.3 [S]
Testing C: Exercise


THE
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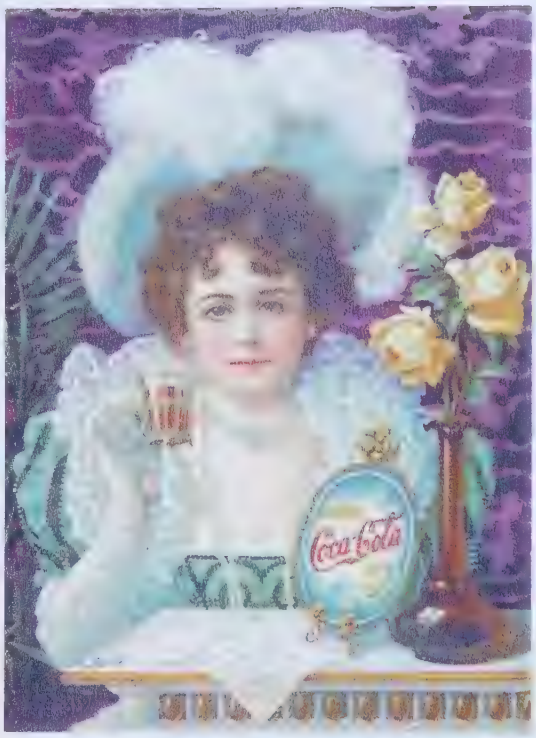
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FIRST CLASS GROCER

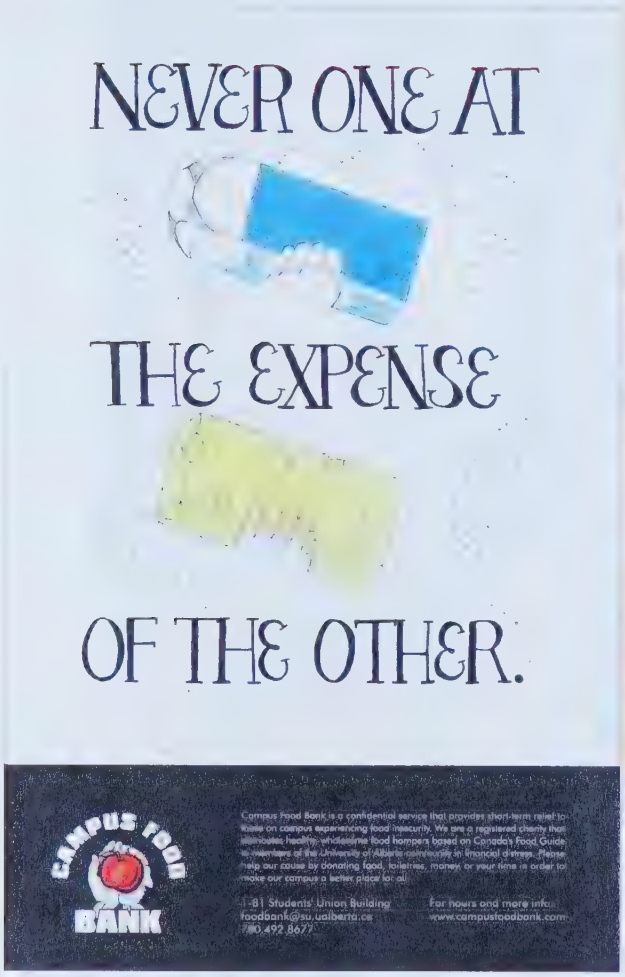

PKZ

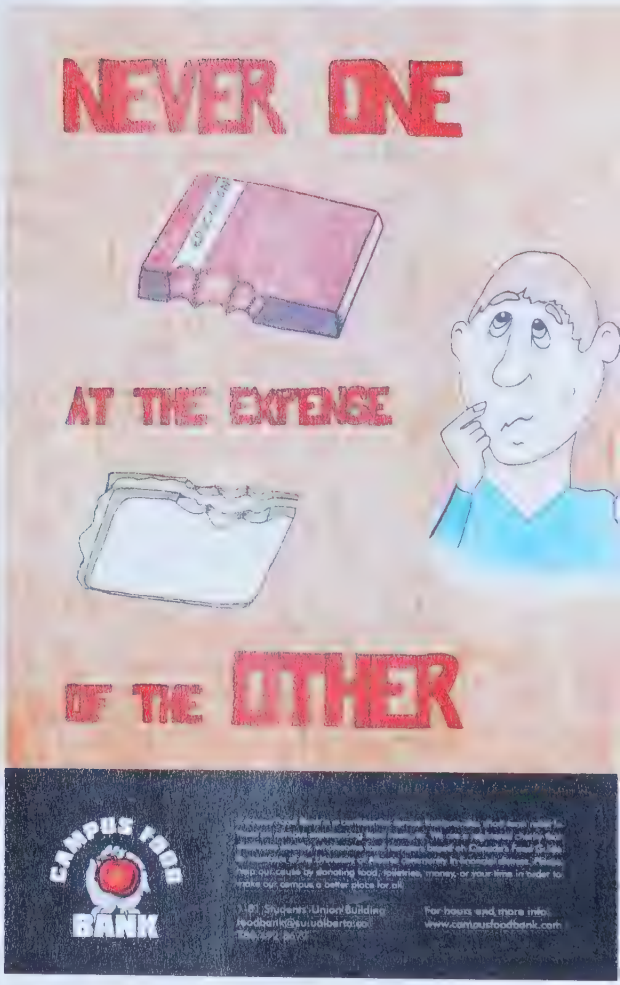

TRIBUNE
DE LAUSANNE

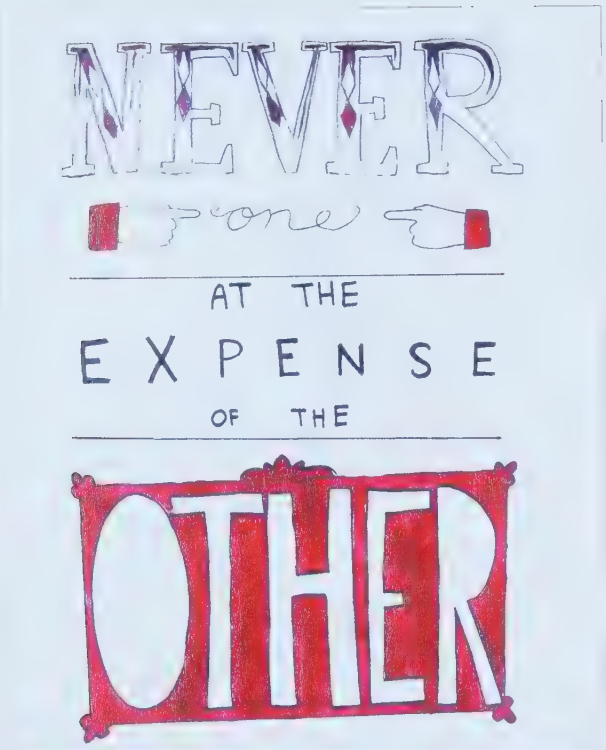

seit
langem
bewährt


georg solti, claudio arrau
brahms, beethoven, schumann

Appendix 4.3 [T]
Testing C: Visual Results



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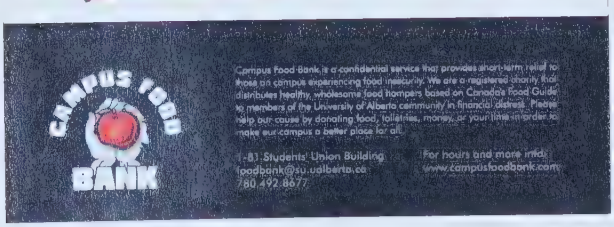
CAMPUS FOOD BANK
Campus Food Bank is a confidential service that provides short-term relief to those on campus experiencing food insecurity. We are a registered charity that distributes healthy, wholesome food hampers based on Canada's Food Guide to members of the University of Alberta community in financial distress. Please help our cause by donating food, toiletries, money, or your time in order to make our campus a better place for all.
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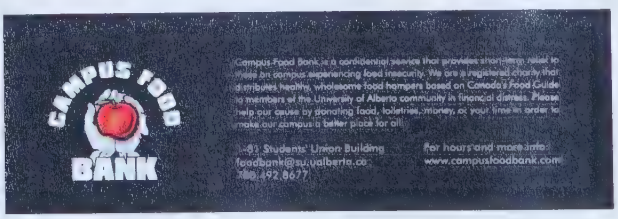
foodbank@su.ualberta.ca
780.492.8677
For hours and more info:
www.campusfoodbank.com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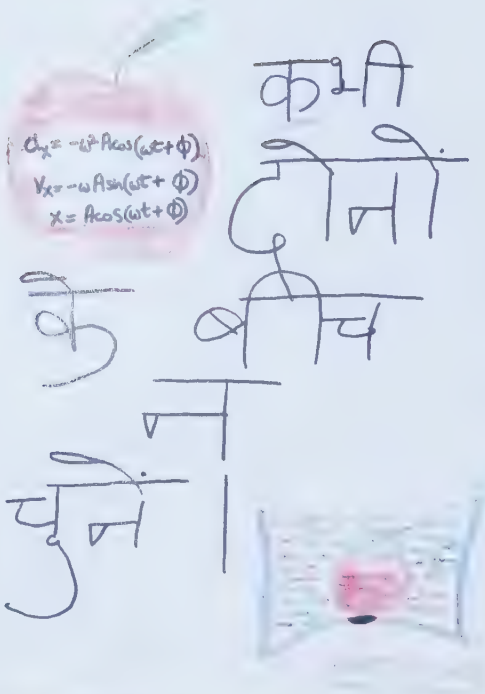
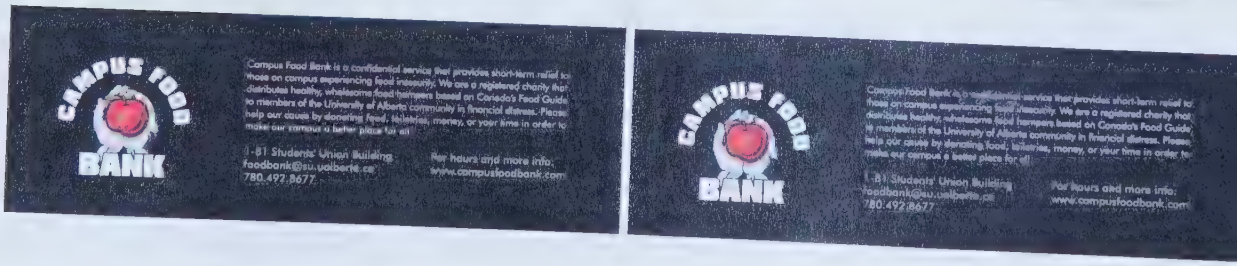
AT THE EXPENSE
OF THE OTHER


$a_x = -\omega^2 A\cos(\omega t+\phi)$
$V_x = -\omega A\sin(\omega t+\phi)$
$x = A\cos(\omega t+\phi)$
कभी
दोनों
के बीच
न
चुनें।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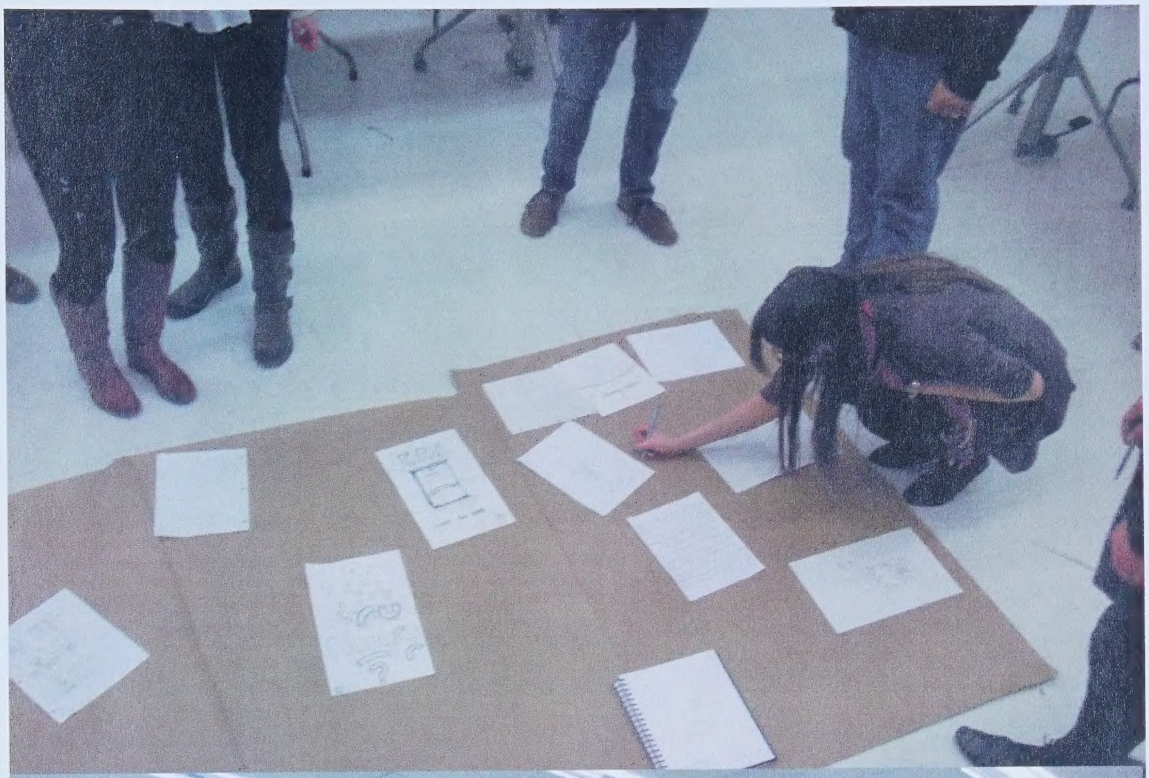
Appendix 4.3 [U]
Testing C: Documentation



Appendix 4.3 [V]
Testing C: Exhibit